STAFF SUMMARY FOR AUGUST 7-8, 2019

2. GENERAL PUBLIC COMMENT (DAY 1)

Today's Item **Information ☒** **Action ☐**

Receive public comments, petitions for regulation change, and requests for non-regulatory actions for items not on the agenda.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Aug 7-8, 2019; Sacramento**
- Consider granting, denying or referring requests Oct 9-10, 2019; Valley Center

Background

This agenda item is primarily to provide the public an opportunity to address FGC on topics not on the agenda. Staff also includes written materials and comments received prior to the meeting as exhibits in the meeting binder (if received by written comment deadline), or as late comments at the meeting (if received by late comment deadline), for official FGC "receipt."

Public comments are generally categorized into three types under general public comment: (1) petitions for regulation change; (2) requests for non-regulatory action; and (3) informational-only comments. Under the Bagley-Keene Open Meeting Act, FGC cannot discuss any matter not included on the agenda, other than to schedule issues raised by the public for consideration at future meetings. Thus, petitions for regulation change and non-regulatory requests generally follow a two-meeting cycle (receipt and direction); FGC will determine the outcome of the petitions for regulation change and non-regulatory requests received at today's meeting at the next in-person FGC meeting following staff evaluation (currently Oct 9-10, 2019).

As required by the Administrative Procedure Act, petitions for regulation change will be either denied or granted and notice made of that determination. Action on petitions received at previous meetings is scheduled under a separate agenda item titled "Petitions for regulation change." Action on non-regulatory requests received at previous meetings is scheduled under a separate agenda item titled "Non-regulatory requests."

Significant Public Comments

1. New petitions for regulation change are summarized in Exhibit 1, and the original petitions are provided as exhibits 3-6.
2. Requests for non-regulatory action are summarized in Exhibit 2, and the original requests are provided as exhibits 7-10.
3. Informational comments are provided as exhibits 11-15.

Recommendation

FGC staff: Consider whether any new future agenda items are needed to address issues that are raised during public comment.

Exhibits

1. Summary of new petitions for regulation change received by Jul 25, 2019 at 5:00 p.m.
2. Summary of requests for non-regulatory action received by Jul 25, 2019 at 5:00 p.m.
3. Petition #2019-013: Add licensed falconers and federally-permitted raptor propagators to the list of legal recipients for non-releasable raptors from licensed rehabilitation facilities.
4. Petition #2019-014: Take of California grunion: Amend recreational take regulations for California grunion (*Leuresthes tenuis*) to (1) change the bag limit from "none" to "ten", (2) reduce the season length, and (3) shift the timing of the seasonal closure north of Point Conception.
5. Petition #2019-016 AM 1: Institute a spring bear hunting season, which could be limited to wilderness areas or zones with high bear densities.
6. Petition #2019-017 AM 1: Institute a traditional archery equipment season for deer and bear in the Marble Mountain Wilderness Area and Trinity Alps Wilderness Area.
7. Email from Chris Clardy, City of Colfax, requesting that FGC find that the petitioned action to list foothill yellow-legged frog under the California Endangered Species Act (CESA) is not warranted and the petition process be ended, received Jul 1, 2019.
8. Email from Tim Dummer, requesting FGC to take legal action against the San Francisco Public Utilities Commission for violations of several statutes, including Fish and Game Code Section 5943 concerning public access for fishing in waters impounded by dams, received Jul 15, 2019.
9. Letter from Donald Baldwin, requesting improved security for personal and confidential information housed in DFW's Automated License Data System, received Jul 16, 2019.
10. Letter from Tom and Patricia Randolph, requesting the approval of a permit for Trinity Alps Resort's continued use of a seasonal dam and swimming hole while the status of foothill yellow-legged frog under CESA is being determined, and a request for FGC and DFW to consult with the Attorney General about legality and potential liability to FGC and DFW of denying permits during the CESA proceedings, received Jul 25, 2019. Similar letters supporting the resort's continued use of the seasonal dam received from Karen McCall (Jul 19) and Mary Ann Adams (Jul 23).
11. Letter from Gretchen Whisenand, in support of listing four bumble bee species as endangered or threatened species under CESA, received Jun 7, 2019.
12. Email from Joan Herskowitz, representing Buena Vista Audubon Society, in support of Petition #2019-014 concerning California grunion, received Jul 21, 2019.
13. Letter from David Griffith, representing Alpine County Board of Supervisors, providing supporting evidence for Petition #2018-016 to remove Hope Valley Wildlife Area from DFW's Lands Pass Program, received Jul 22, 2019.
14. Letter and supporting documents from Dennis Fox, concerning negative impacts of water subsidies, received Jul 23, 2019.
15. Email from Karen Martin, providing letters of support and additional information related to Petition #2019-014 concerning California grunion, received Jul 25, 2019.

Motion/Direction (N/A)

CALIFORNIA FISH AND GAME COMMISSION PETITIONS
RECEIPT LIST FOR PETITIONS FOR REGULATION CHANGE: RECEIVED BY 5:00 PM ON JULY 25, 2019
Revised 7/31/2019

General Petition Information					FGC Action	
Tracking No.	**Date Received**	**Name of Petitioner**	**Subject of Request**	**Short Description**	**FGC Receipt Scheduled**	**FGC Action Scheduled**
2019-013	6/10/2019	Douglas R. Alton	Falconers and raptors	Add licensed falconers and federally permitted raptor propagators to the list of legal recipients for non-releasable raptors from licensed rehabilitation facilities.	8/7-8/2019	10/9-10/2019
2019-014	6/20/2019	Karen Martin, PhD	Take of California grunion	Amend California grunion (Leuresthes tenuis) recreational take regulations to (1) change the bag limit from “none” to “ten”, (2) reduce the season length, and (3) shift the timing of the seasonal closure north of Pt. Conception.	8/7-8/2019	10/9-10/2019
2019-016 AM 1	7/31/2019	Preston Taylor	Spring bear hunting	Institute a spring bear hunting season, which could be limited to wilderness areas or zones with high bear densities.	8/7-8/2019	10/9-10/2019
2019-017 AM 1	7/31/2019	Preston Taylor	Archery bear and deer hunting	Institute a traditional archery equipment season for deer and bear in the Marble Mountain Wilderness Area and Trinity Alps Wilderness Area.	8/7-8/2019	10/9-10/2019

CALIFORNIA FISH AND GAME COMMISSION
RECEIPT LIST FOR NON-REGULATORY ACTION: RECEIVED BY 5:00 PM ON JULY 25, 2019
Revised 7/31/2019

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Date Received	Name of Requester	Subject of Request	Short Description	FGC Decision
7/1/2019	Chris Clardy City of Colfax	Petition to list foothill yellow-legged frog under the California Endangered Species Act (CESA)	Request for FGC to find that the petitioned action to list foothill yellow-legged frog under CESA is not warranted and the petition process be ended.	**Receipt: 8/7-8/2019** **Action: 10/8-9/2019**
7/15/2019	Tim Dummer	Public access for fishing in waters impounded by dams	Request for FGC to take legal action against the San Francisco Public Utilities Commission for violations of several statutes, including Fish and Game Code Section 5943 concerning public access for fishing in waters impounded by dams.	**Receipt: 8/7-8/2019** **Action: 10/8-9/2019**
7/16/2019	Donald Baldwin	Security of personal and confidential information	Request to secure access to personal and confidential information housed in DFW's Automated License Data System (ALDS).	**Receipt: 8/7-8/2019** **Action: 10/8-9/2019**
7/25/2019	Tom and Patricia Randolph	Use of seasonal dam and swimming hole at Trinity Alps Resort	Request to approve a permit for Trinity Alps Resort's continued use of a seasonal dam and swimming hole while the status of foothill yellow-legged frog under CESA is being determined, and a request to consult with the Attorney General about the legality of the CESA proceedings and potential liability to FGC and DFW of denying permits during the CESA proceedings.	**Receipt: 8/7-8/2019** **Action: 10/8-9/2019**

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section l). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 6534899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: Douglas R Alton

Address:

Telephone number:

Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: Fish and Game Code Section 200

3. Overview (Required) - Summarize the proposed changes to regulations: Add licensed falconers and federally permitted raptor propagators to the list of legal recipients for non-releasable raptors from licensed rehabilitation facilities.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: Non-releasable raptors are often euthanized if not placed, which is a waste of a public resource. Non-releasable raptors will be given a second chance at life with a licensed falconer or federally permitted raptor propagator.

SECTION Il: Optional Information

5. Date of Petition: 06/10/19

6. Ca Category of Proposed Change
☐ Sport Fishing
☐ C] Commercial Fishing
☐ Hunting
☒ Other, please specify: Falconry / Rehab.

7. The proposal is to: (To determine section number(s), see current year regulation booklet or https://qovt.west/aw.com/calreas)
Amend Title 14 Section(s):679.(f) (4) Possession of Wildlife and Wildlife Rehabilitation
Add New Title 14 Section(s): Click here to enter text.
Repeal Title 14 Section(s): Click here to enter text.

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Click here to enter text. Or Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation. If the proposed change requires immediate implementation, explain the nature of the emergency: Within reason 01/01/2020

1 0. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Click here to enter text.

1 1 . Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: None

12. Forms: If applicable, list any forms to be created, amended or repealed:
Click here to enter text.

SECTION 3: FCC Staff only

Date received: Received by email on Monday, June 10, 2019 at 9:01 AM.

FGC staff action:

☑ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority
☐ Denied by FGC
☐ Denied - same as petition

☐ Granted for consideration of regulation change

Tracking Number: (2019-014)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)
Name of primary contact person: Karen Martin, PhD
Address:
Telephone number:
Email address: karen.martin@pepperdine.edu

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: **Fish and Game Code Section 8381;** Section 28.00 cites sections 200, 202 205, 210, 219, and 220 of the Fish and Game Code. Section 200 is relevant as this is not a commercial take. Section 202 was repealed Stats 2016. Section 205 is relevant as it allows the Commission to change or abolish an open season and to establish or change a bag limit. Section 210 is repealed Stats 2016. Section 219 is relevant as it provides the Commission authority to act to protect fish, wildlife, and natural resources. Section 220 is repealed Stats 2016**.**

3. Overview (Required) - Summarize the proposed changes to regulations: 1) Change the bag limit from "none" to "ten of one species" for California Grunion *Leuresthes tenuis*; 2) Reduce the length of the seasonal closure for California Grunion; 3) Shift the timing of the seasonal closure north of Pt. Conception for California Grunion.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: **See Attached for full text:** Rationale for request for change in regulations: Unique Species Targeted During Critical Reproductive Season in a Shrinking Habitat

SECTION II: Optional Information

5. Date of Petition: June 2019

6. Category of Proposed Change

☒ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☐ Other, please specify:

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)

☐ Amend Title 14 Section(s):27.60(b); no bag limit, to 27.60 (a), limit of 10 for one species; Section 28.00, seasonal closure, may be taken June 1 – March 31; change to July 1 – March 31 south of Pt. Conception. North of Pt. Conception, seasonal closure, change so may be taken September 1 – March 31. Section 28.00 cites sections 200, 202 205, 210, 219, and 220 of the Fish and Game Code. Section 200 is relevant as this is not a commercial take. Section 202 was repealed Stats 2016. Section 205 is relevant as it allows the Commission to change or abolish an open season and to establish or change a bag limit. Section 210 is repealed Stats 2016. Section 219 is relevant as it provides the Commission authority to act to protect fish, wildlife, and natural resources. Section 220 is repealed Stats 2016.
☐ Add New Title 14 Section(s):
☐ Repeal Title 14 Section(s):

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition

Or ☒ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: April 2020

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Powerpoint about California grunion, scientific journal article on population trends of California grunion .

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: There is no commercial fishery and it is illegal to sell recreational catch. No gear is legal for this species. It is unlikely that there will be negative economic impacts from reduced recreational fishing. It is possible that improved grunion runs will attract tourism for wildlife watching during the expanded closed season. Tourism agencies in coastal cities currently list grunion runs as an attraction.

12. Forms: If applicable, list any forms to be created, amended or repealed:

SECTION 3: FGC Staff Only

Date received: Received by email on Thursday, June 20, 2019 at 7:22 AM.

FGC staff action:

- ☑ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number 2019-014

Date petitioner was notified of receipt of petition and pending action: August 7-8, 2019

Meeting date for FGC consideration: October 9-10, 2019

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
  Tracking Number
- ☐ Granted for consideration of regulation change

Received by email on Thursday, June 20, 2019 at 7:22 AM as attachment 1 to petition 2019-014 -

Rationale for request for change in regulations: Unique Species Targeted During Critical Reproductive Season in a Shrinking Habitat

Life History and Current Regulations:

California grunion *Leuresthes tenuis* (Atherinopsidae), indigenous endemic marine fish, emerge out of water onto sandy beaches on the Pacific coast of California and Baja California to reproduce (Gregory, 2001). In a unique recreational fishery, people capture these fish out of water with bare hands during their midnight spawning runs (Spratt, 1986; Sandrozinski, 2013).

Because of their unusual life cycle, California Grunion are particularly vulnerable to overharvest. Less than 10 years after the first published scientific description of their spawning behavior (Barnhart, 1918; Thompson,1919), the first regulations to protect them were enacted in 1927 (Clark, 1926, 1938) by the California Department of Fish and Game (now Wildlife), CDFW. At that time, people would line the shore, capturing hundreds of grunion with improvised nets made of bed sheets (Andrew Olson, Jr., personal communication), using them for food and fertilizer.

Early protections included a seasonal closure, with no take from April through June, the peak of the spawning season. Gear restrictions specify no gear at all; only bare hands are allowed for capturing these fish, presumably to give them a sporting chance while on shore. Under the age of 16, children do not need a fishing license to catch grunion during open season. No commercial use of the species is permitted. However, there is no bag limit, and no requirement to report recreational catch of this species.

Walker (1949) observed grunion runs on Scripps Beach directly following World War II. Based on his recommendations, CDFW shortened the seasonal closure to April and May. Gear restrictions and license requirements remained in place. At that time California's population was substantially smaller, 10 million. Today, more than 35 million people live along one of the most densely populated coasts in the world, and millions more visit as tourists.

Sandy beaches are critical to California grunion as Essential Fish Habitat for spawning (Robbins 2006). However, beaches in California and worldwide are losing habitat by coastal squeeze (Defeo et al., 2009; Shoeman et al., 2014; Martin, 2015), with sea level rise and erosion encroaching on the beach from the seaward side, and coastal development and seawalls preventing natural retreat of the beach on the landward side (Dugan et al., 2008). Exacerbated by climate change and increasing human population, California is predicted to lose 31 to 67% of its sandy beaches by the year 2100 under current predictions of sea level rise (Vitousek et al., 2017).

Current uses of California Grunion:

Some anglers catch this species for bait, some people catch these small fish to consume whole, but most of those capturing the grunion report they are doing so for the sport, not for any specific use but because hunting them is part of popular culture.

California Grunion runs are highlighted in public education programs of public aquariums and California State Beaches, and for youth organizations such as the Boy Scouts. Because runs follow the highest spring tides of full or new moons, likely nights and times can be forecast (Walker, 1952; Spratt, 1986). Runs can be dazzling, with thousands of fish moving out of waves onto shore for an hour or more.

Because of its beach-spawning habits, California Grunion has been identified as a Key Indicator Species for the South and Central regions of California Marine Protected Area (Marine Protected

Area Monitoring Action Plan, 2018), and as an indicator species for climate change on beaches in the Ventura County Coastal Resilience Plan (https://www.vcrma.org/vc-resilient-coastal-adaptation-project).

Population status of California Grunion:

Traditional fishery methods cannot be used for stock assessments of California grunion. This species has never been abundant (Gregory, 2001). It is planktivorous (Higgins and Horn, 2014) and does not take a hook. Adults are rarely caught in trawl surveys except within enclosed bays (Allen et al., 2002; Martin et al., 2013; Williams et al., 2016). The only time California grunion can reliably be observed is during their spawning runs.

Runs may occur when tides are suitable, within a two-hour window following the highest nightly tide in four nights after full and new moons in spring and summer. However, often on nights when runs are forecast, no grunion are seen on shore (Martin et al., 2019).

Volunteer citizen scientists, the Grunion Greeters, report observations of spawning runs on beaches all along the California Coast. With reports across the habitat range over two decades (Martin et al., 2007, 2011), this long-term dataset can discern broad trends in population, in order to guide conservation of this endemic species. Grunion Greeters assess the number of fish on shore, the length of shoreline involved, and the duration of the spawning run at its peak with a metric, the Walker Scale, which ranges from W0 (no fish) to W5 (fish covering the shore).

Over 4500 Grunion Greeters have provided over 5000 reports in the past two decades. This compilation is the most complete dataset for this species in existence, both in terms of geographic coverage and duration of observations. Reports come from the entire habitat range, over 50 beaches in California and Baja California, Mexico. A range extension for spawning runs was discovered in 2002 in San Francisco Bay (Johnson et al., 2009), followed by a northward range extension to Tomales Bay in 2005 (Roberts et al., 2007).

Concerns raised by reports from Grunion Greeters:

Large spawning runs still occur, but smaller grunion runs are much more common than in past. Spawning on shore has declined significantly across much of the habitat range in the past fifteen years. This pattern is consistent for this endemic fish across the three coastal counties constituting its core habitat (San Diego, Orange, and Los Angeles), and also on individual beaches known historically for large grunion runs (Martin et al., 2019).

California grunion appear to be shifting habitat range northward to some extent (Martin et al. 2013; Martin et al., 2019). The shift in habitat comes at the cost of smaller adult size and reduced number of eggs, as well as a shorter spawning season (Johnson et al., 2009).

Noisy activities of recreational grunion hunters on shore disrupt spawning runs, preventing fish from reproducing before capture. Poaching during closed season is common on some urban beaches, reported in about 20% of closed season observations. Collection of spawning fish is nearly universal during open season, identified in 90% of open season reports, disrupting runs and preventing reproduction while removing ripe adults from the population (Martin et al., 2019). Regulations are rarely and unevenly enforced, in part because spawning runs always occur in the dark of night.

Many grunion hunters do not fish for any other species, and do not possess fishing licenses. Thus the potential number of people hunting California Grunion is far greater than the 2.5 million sport fishing licenses that were sold in California in 2016.

The occasional presence of large spawning aggregations may create the illusion of abundance even when a population is depleted (Erisman et al., 2011). Occasional large runs may tempt resource managers to believe that these kinds of runs are both more common and more widespread geographically than is the actual situation (Sadovy and Domeier, 2005).

We suggest it is possible that the numbers of adult fish could drop too low for successful spawning even when some members of the species are present and ripe. Runs with fewer than a hundred individuals usually do not include spawning events or egg deposition. Small numbers of fish in a run indicate unsuccessful reproduction. The consistent pattern of decline in median run size is of great concern for this beach-spawning species.

The sister species, the Gulf Grunion *Leuresthes sardina*, endemic to the northern Gulf of California (Bernardi et al., 2003), shares the beach-spawning habits of *L. tenuis* (Thomson and Muench, 1976). The Gulf Grunion appears on the IUCN Red List as "Near Threatened" because of potential habitat loss and human interference. (Findlay et al., 2010). Our California Grunion may face even greater threats than the Gulf Grunion because of larger human populations and more coastal development in California compared with Mexico.

Recommendations for change:

Although this managed species enjoys some unique protections, fishing regulations have not changed since 1949, while fishing pressure has increased.

We strongly encourage increased protection for this charismatic indigenous endemic marine fish.

- Section 28.00, seasonal closure, may be taken June 1 – March 31→ change seasonal closure to include June; may be taken July 1 – March 31 south of Pt. Conception. North of Pt. Conception, seasonal closure, may be taken September 1 – March 31.

Change requested: For the southern population, return seasonal closure April - June, as originally designated in 1927. For the *L. tenuis* north of Pt. Conception, shift the timing of the seasonal closure, to protect the peak season that occurs later there, closure from April – August.

- Section 27.60(b); no bag limit →change to 27.60 (a), limit of 10 for one species.

Change requested: We recommend a change from no bag limit to a limit of no more than 10 fish.

Section 28.00 cites sections 200, 202 205, 210, 219, and 220 of the Fish and Game Code. Section 200 is relevant as this is not a commercial take. Section 202 was repealed Stats 2016. Section 205 is relevant as it allows the Commission to change or abolish an open season and to establish or change a bag limit. Section 210 is repealed Stats 2016. Section 219 is relevant as it provides the Commission authority to act to protect fish, wildlife, and natural resources. Section 220 is repealed Stats 2016.

References Cited

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Received by email on Thursday, June 20, 2019 at 7:22 AM as attachment 2 to petition 2019-014

Tracking Populations of California Grunion: Petition for Change

Dr. K. L. M. Martin,
Pepperdine University,

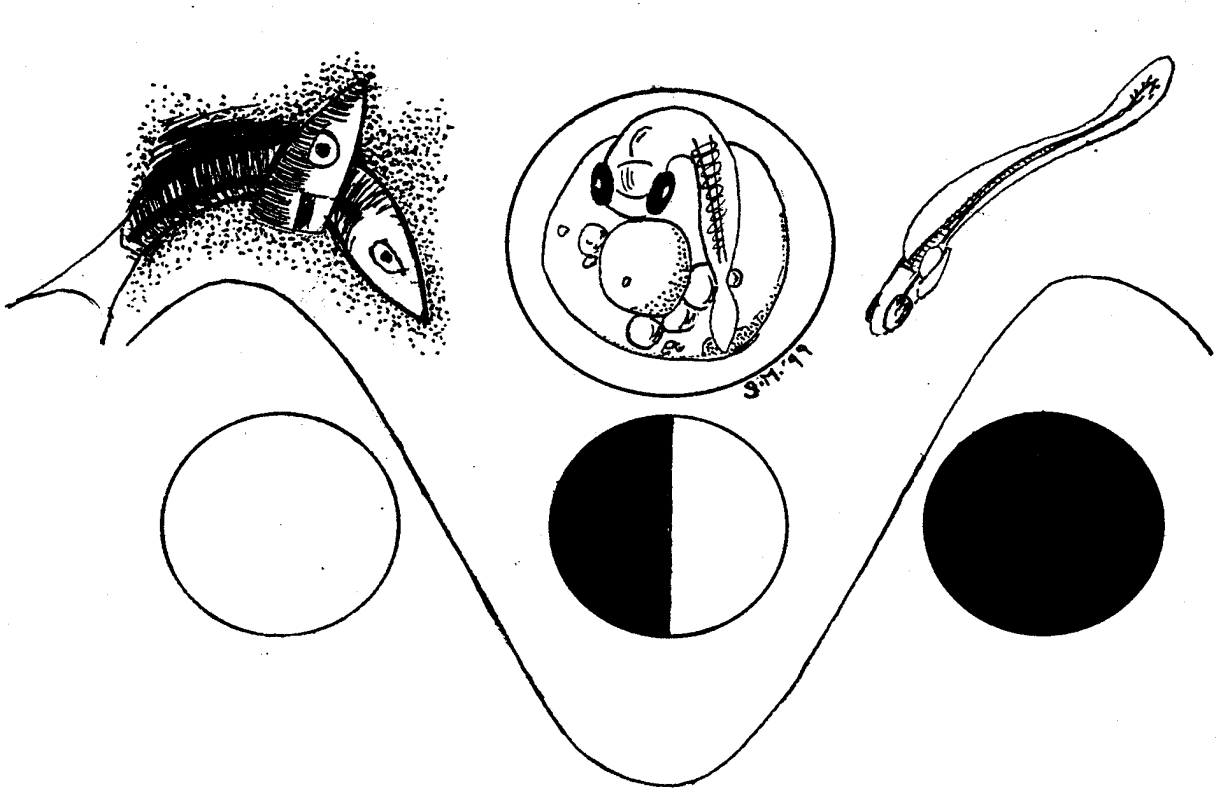
With citizen science data from the
Grunion Greeters

Photo: Carl Manaster, Grunion.org

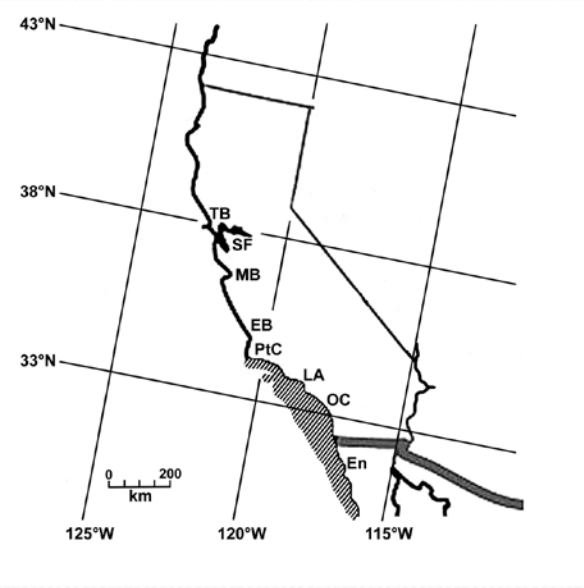
CA Grunion life cycle

Leuresthes tenuis

- Endemic species, onl in California and Baja California, Mexico.
- Spawn on sandy beaches during high tides, after full or new moons.
- Eggs incubate out of water under sand unti the next semilunar tides.
- Larvae hatch with rising tides.



CA Grunion: CDFW Managed Species



This indigenous endemic marine fish occurs mainly off the coast of three counties: San Diego, Orange, and Los Angeles.

Recently the habitat expanded to a few locations north of Pt. Conception.

CA Grunion have never been abundant.

CA Grunion are vulnerable to recreational overharvest and to other human activities on the shore.

Since 1927, spawning CA Grunion are protected by:

Photo by J. Flannery, M. Reiss, Grunion.org

- Closed season (no take) April and May, originally April - June.
- Gear restrictions (none allowed).
- License requirement for age 16 and above.
- HOWEVER--
- No bag limit.
- No reporting of catch.

The challenges of assessing the stock of *L. tenuis* are many.

- Traditional fishery sampling methods don't work.
- CA Grunion are observed only during spawning runs.
  - Runs vary widely over space and time.
  - All runs occur around the same time of night.
  - Runs occur late at night on dark beaches.

Solution: Grunion Greeters!

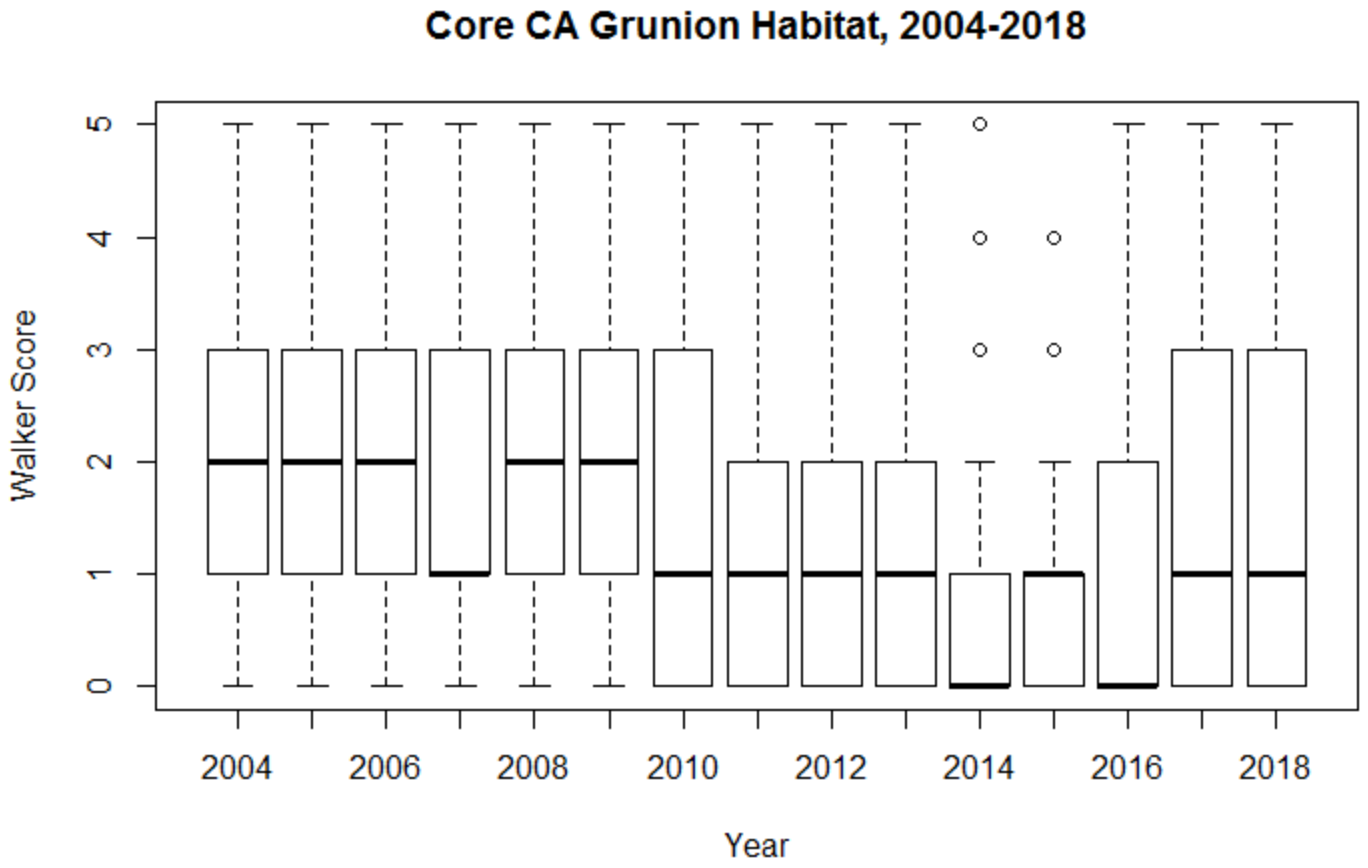
Citizen scientists attend training workshops and monitor specific beaches during nights when grunion runs are forecast.

Walker Scale for Grunion Runs

used by Grunion Greeters

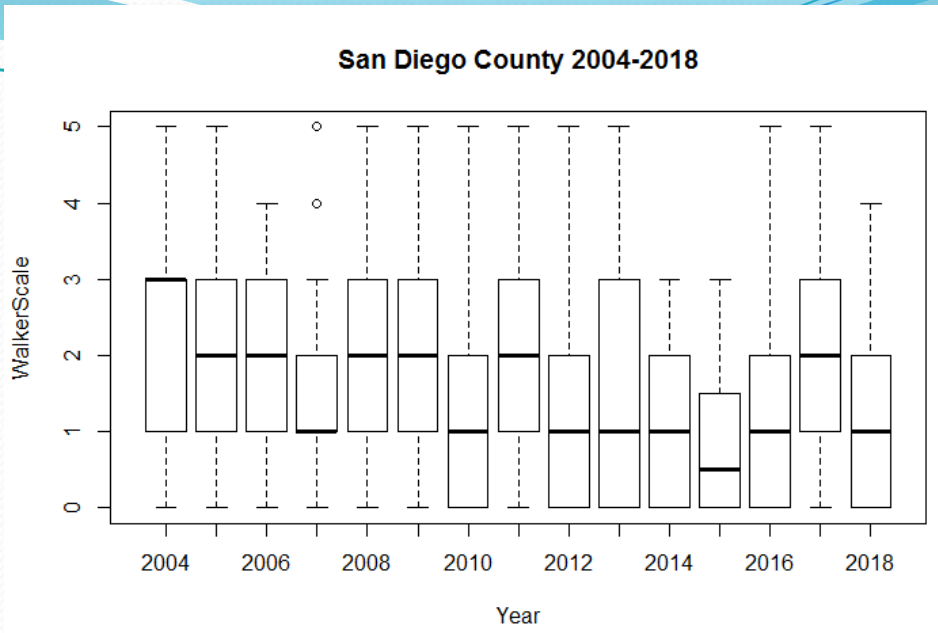
- W-0: No fish show up, or just a few, no spawning.
- W-1: More than 10, and up to 100 fish show up, little or no spawning behavior
- W-2: 100-500 fish; scattered across the beach or in one area, spawning activity
- W-3: several hundred to 1000 fish spawning in one or several locations along the beach
- W-4: thousands of fish spawning across a wide area of the beach
- W-5: fish covering the beach across a wide area, run lasts an hour or more

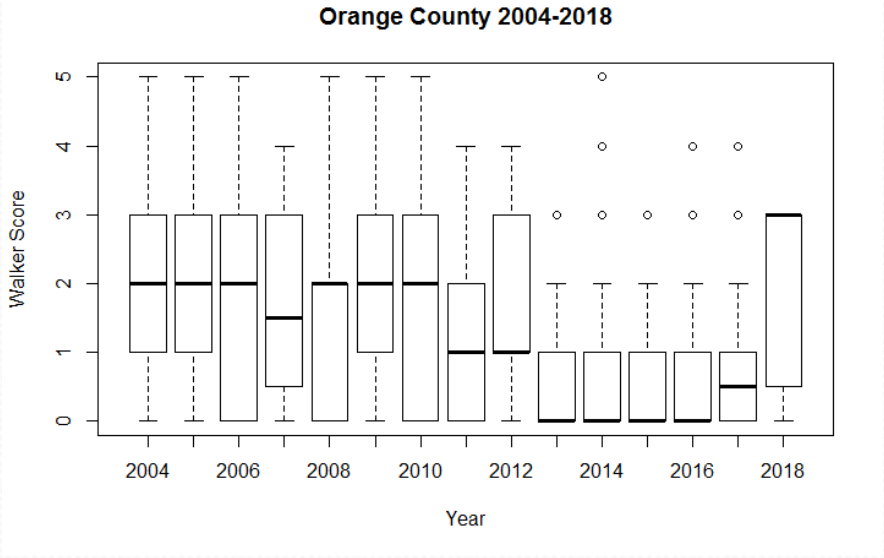
Reports indicate runs have decreased over time in the core species habitat.

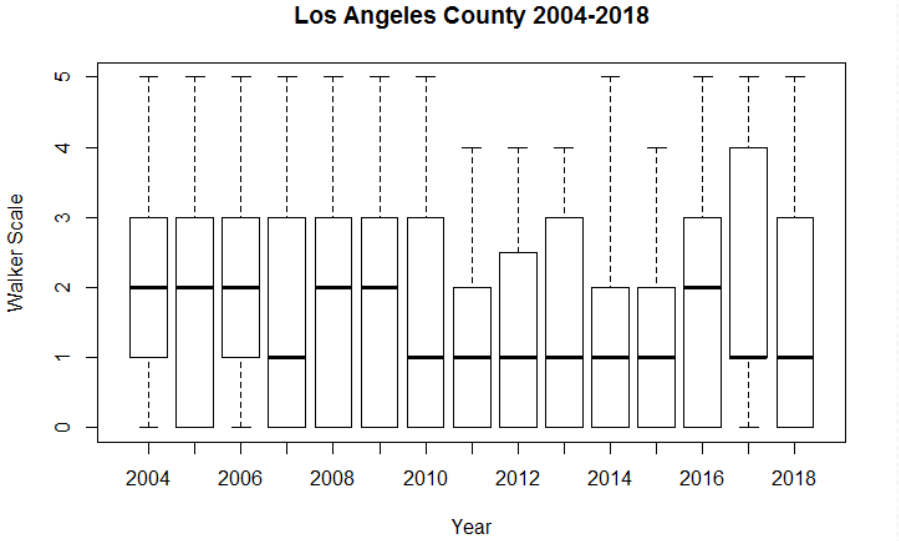


Median run has declined over the past 15 years in San Diego, Orange, and LA counties.

Decline in runs is consistent across each county in the core habitat.

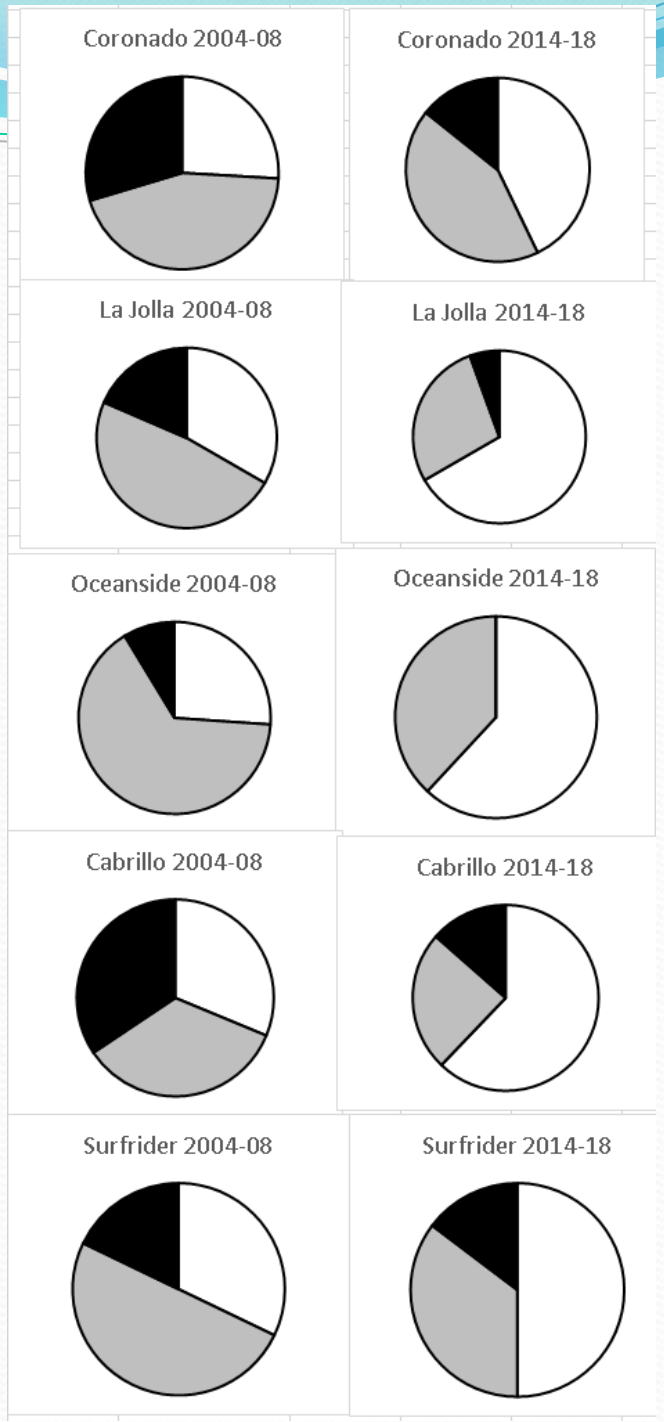




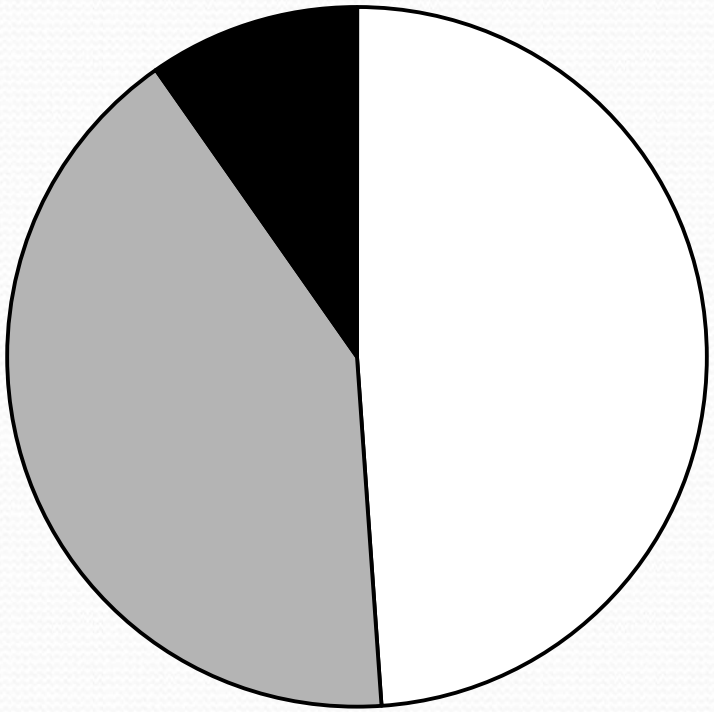


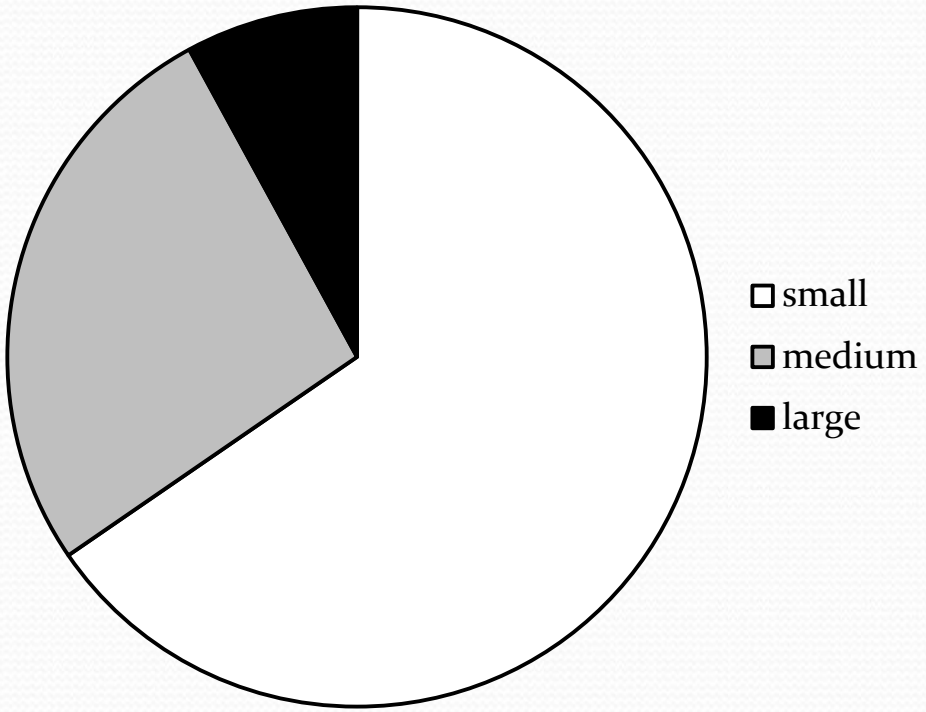
Decline in runs is consistent even at beaches known to hold large runs

White: small, W0-1
Grey: medium, W2-3
Black: large runs, W4-5



Comparison across decades: significantly more small runs, fewer medium and large runs, suggests lower reproductive output.





2004-08 **2014-18**

Poaching (out of season, or using gear in season, or without a fishing license)

In general: poaching in about 20% of reports in Closed Season

Hunting is reported in 93% of observations in Open Season

Regulations are rarely enforced late at night when runs occur.

Grunion spawning zone is small

- Clutches of eggs are buried in a band no more than 3 m wide parallel to shore on busy recreational beaches
- Yes, this is a grunion beach during spawning season.

Northern Grunion are smaller, spawn later, and produce fewer eggs →more vulnerable

Malibu grunion (L)
northern grunion (R)

What actions are needed?

- We recommend changes for the recreational fishery
  - Amend 27.60(b); no bag limit, to 27.60(a), limit 10;
  - Section 28.00, seasonal closure, south of Pt. Conception restore June closure, 7/1 – 3/31.
  - Section 28.00 north of Pt. Conception: later closure, may be taken 9/1 – 3/31.

Photo: Bill Hootkins, 2004

Grunion Greeters THANK YOU FOR YOUR HELP!!!

We encourage
"Observe and Conserve,"
or "Catch and Release"
so that future generations will be able to marvel at this unique, charismatic species.

See www.Grunion.org for more

ICES Journal of Marine Science

ICES International Council for the Exploration of the Sea
CIEM Conseil International pour l'Exploration de la Mer

ICES Journal of Marine Science (2019), doi:10.1093/icesjms/fsz086

Contribution to the Themed Section: '*Marine recreational fisheries - current state and future opportunities*'

Population trends of beach-spawning California grunion *Leuresthes tenuis* monitored by citizen scientists

Karen L. M. Martin [1]*, Emily A. Pierce[2], Vincent V. Quach[1], and Melissa Studer[3]

[1]*Department of Biology, Pepperdine University, 24255 Pacific Coast Highway, Malibu, CA 90263-4321, USA*
[2]*Moss Landing Marine Laboratories, Moss Landing, CA 95039, USA*
[3]*Beach Ecology Coalition, Grunion Greeters, La Jolla, CA 72037, USA*

**Corresponding author: tel: 310-506-4808; e-mail: Karen.Martin@pepperdine.edu.*

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California Grunion *Leuresthes tenuis* (Atherinopsidae), an indigenous endemic marine fish, makes spectacular midnight spawning runs onto sandy beaches on the Pacific coast of California and Baja California. In a unique recreational fishery, people capture the fish out of water with bare hands. Grunion hunters are not required to report their catch, and there is no bag limit. California Grunion rarely appear in trawls and do not take a hook, so population status for this species is impossible to obtain by traditional fishery methods. With citizen scientists, the "Grunion Greeters," we monitored spawning runs along most of their habitat range. California Grunion recently underwent a northward range extension, but runs appear to be declining broadly across the core habitat. Noisy activities of recreational grunion hunters on shore disrupt spawning runs, preventing fish from reproducing before capture. *Leuresthes tenuis* has been identified as a Key Indicator Species for the South and Central regions of California Marine Protected Areas, and as an indicator species for climate change on beaches. Gear restrictions, license requirements, and a two-month closed season are rarely enforced late at night. We recommend continued monitoring for *L. tenuis* in California and increased protections for this unique charismatic fish.

Keywords: beach-spawning, citizen science, closed season, endemic species, Atherinopsidae, fishing gear, poaching, recreational fishery, reproduction, spawning run, spawning aggregations.

Introduction

California Grunion *Leuresthes tenuis* (Atherinopsidae) is an indigenous endemic marine fish on the Pacific coast of California. Famous for forming large assemblages that lead to massive runs, individual fish emerge fully out of waves onto beach sand to spawn (Martin, 2015). Runs may last for over an hour following full or new moons in spring and summer, and fish may cover the beach along the water line (see Supplementary Material). In the traditional habitat range of southern California, between Pt. Conception, California and Punto Abreojos, Mexico, spawning season starts in March and may extend into August, peaking between April and June (Clark, 1938; Walker, 1952).

Females dig into the soft wet sand to deposit 1500–3000 eggs while surrounded by males providing milt for external fertilization. Males do not dig into the sand, and may outnumber females by 10 to 1 during the run. Multiple paternity of clutches is typical (Byrne and Avise, 2009), and each male may repeatedly return to shore during a single night's run (Walker, 1949), providing milt for multiple females with a muscular genital papilla (Aryafar *et al.*, 2019). Thus, multiple waves may carry hundreds of the same individuals over and over again. Females spawn once during a series but can spawn multiple times across the season (Clark, 1925; Walker, 1949). The number of fish on shore cannot be easily counted during a large run, but the density, duration, and

extent of the fish are far greater during some runs than others (Walker, 1949; Martin *et al.*, 2007).

Leuresthes tenuis is targeted by a unique recreational fishery, solely during these spawning runs (Spratt, 1986; Sandrozinski, 2013). Because of their unusual life cycle, California Grunion are particularly vulnerable to overharvest. Less than 10 years after the first published scientific description of their spawning behaviour (Barnhart, 1918; Thompson,1919), the first regulations to protect them were enacted in 1927 (Clark, 1926, 1938) by the California Department of Fish and Game (now Wildlife), CDFW. At that time, people would line the shore and capture hundreds of grunion with improvised nets made of bed sheets (Andrew Olson, pers. comm.). Early protections included a closure with no take from April to June, the peak of the spawning season, and gear restrictions that specify no gear at all. Only bare hands were (and are) allowed for capturing the fish, presumably to give them a sporting chance while on shore. Those under the age of 16 did not (and still do not) need a fishing license to catch grunion during the open season.

Walker (1949) observed grunion runs on Scripps Beach directly following World War II. On the basis of his recommendations, CDFW reduced the closed season to just April and May. Gear restrictions and license requirements remain in place. At that time California's population was substantially smaller, around 10 million, than it is today, with >35 million people living along one of the most extensively populated and urbanized coasts in the world.

During open season there is no bag limit and no requirement to report catch of this species. No commercial use of the species is permitted. Some anglers catch this species for bait, some people catch these small fish to consume whole, but most of those capturing the grunion report they are doing so for the sport, not for any particular use but because it is part of popular culture.

In reality, regulations are rarely enforced, in part because spawning runs always occur in the dark of night. Although this endemic species enjoys some unique protections, regulations have not been changed since 1949.

California Grunion runs are highlighted in public education programs of coastal public aquariums and California State Beaches, and for youth organizations such as the Boy Scouts. Because runs follow the highest spring tides of full or new moons, likely nights and times can be predicted with some success (Walker, 1952; Spratt, 1986). Especially during closed season, observation of runs can be dazzling, with thousands of fish moving out onto shore from waves for an hour or more. Runs may occur when tides are suitable, within a 2-h window following the highest nightly tide in four nights after full and new moons in spring and summer. However, often on nights when runs are forecast, no grunion are seen on shore.

Sandy beaches are critical to *L. tenuis* as essential fish habitat for spawning (Robbins, 2006). However, beaches in California and worldwide are undergoing habitat loss by coastal squeeze (Defeo *et al.*, 2009; Schoeman et al., 2014; Martin, 2015), with sea level rise and erosion encroaching on the beach from the seaward side, and coastal development and shoreline armouring preventing natural retreat of the beach on the landward side (Dugan *et al.*, 2008). Exacerbated by climate change and increasing human population, California is predicted to lose 31–67% of its sandy beaches by the year 2100 under current predictions of sea level rise (Vitousek *et al.*, 2017).

Because of its beach-spawning habits, *L. tenuis* has been identified as a Key Indicator Species for the South and Central regions of California Marine Protected Area (Marine Protected Area Monitoring Action Plan, 2018), and as an indicator species for climate change on beaches in the Ventura County Coastal Resilience Plan (https://www.vcrma.org/vc-resilient-coastal-adaptation-project). However, monitoring for *L. tenuis* is problematic. This species has never been abundant (Gregory, 2001). *Leuresthes tenuis* is planktivorous (Higgins and Horn, 2014); this species does not take a hook. Adults are rarely caught in trawl surveys except within enclosed bays (Allen *et al.*, 2002; Martin et al., 2013; Williams *et al.*, 2016). Recreational fishers are not required to report catch of this species. Thus, traditional fishery methods cannot be used for stock assessments. The only time *L. tenuis* adults can reliably be observed is during their spawning runs.

We developed a group of volunteer citizen scientists, the Grunion Greeters, to report observations of spawning runs on suitable nights all along the California Coast. This started as a way of addressing management issues on sandy beaches, particularly the ecological effects of raking or grooming of beach sand for aesthetic purposes (Martin *et al.*, 2006; Defeo *et al.*, 2009; Dugan and Hubbard, 2010). On the basis of observations and reports across the habitat range over two decades (Martin *et al.*, 2007, 2011), we have become concerned about the status of the California Grunion population as a whole. We hypothesized that this long-term dataset from Grunion Greeter observations would enable us to discern broad trends in population size of this species along its habitat range, in order to guide conservation of this endemic species.

Methods

Metric for spawning run assessment

Strength, duration, and extent of the spawning runs are assessed by a species-specific metric, the Walker Scale, developed in 1999 by the first author with Mike Schaadt and Suzanne Lawrenz-Miller of Cabrillo Marine Aquarium in San Pedro, CA (Table 1). Initially used to compare runs in Malibu with runs in San Pedro, this method was adopted for volunteers in the Grunion Greeter program starting in 2002 (Martin *et al.*, 2007, 2011). The metric was named after Boyd Walker, in honour of his research on the timing of grunion spawning runs, mainly at Scripps Beach in La Jolla, CA. Walker also relied on volunteer observers to assess runs on two nights in 1947 from multiple different beach locations (Walker, 1949), although they used a different metric than ours.

Grunion Greeters were trained in a series of short workshops from 2002 to 2018 to understand the Walker Scale categories and assess the number of fish on shore at the peak of the run, the duration of the peak of the run, and the extent of shoreline involved in the peak of the run. Greeters make other observations about the conditions during a night when a grunion run is forecast, including weather and presence of animal predators or grunion hunters. Observers use an online web portal to input their data, usually within 24 h. The data portal is open to the public, and the questionnaire includes an assessment of the experience of the observer and whether or not they attended previous training workshops. See www.Grunion.org for additional details. Grunion Greeter data focus on closed season, April and May, but also includes reports from open season before and after. Because the Greeters are volunteers, the locations and number of reports are not constant from year to year, however some beaches are more consistently observed, and may be considered sentinel beaches.

Table 1. The Walker Scale for assessment of grunion runs.

Scale	Number of Grunion on shore at the peak of the run	Duration of peak	Descriptor
W0	No fish or only a few, little or no spawning	Up to an hour	Not a run
W1	Up to 100 fish scattered over a wide area of the beach at a time, some spawning	Up to an hour	Light run
W2	100–500 fish spawning over time, many fish ashore with many of the waves	Up to an hour	Good run
W3	Hundreds of fish spawning at once on several areas of the beach, or thousands in one area	Up to an hour or more	Strong run
W4	Thousands of fish together over a broad area, little sand visible between fish at peak of run	Peak lasts minutes up to an hour	Excellent run
W5	Fish covering the beach several individuals deep, a silver lining of the surf over an extensive area, impossible to walk through run without stepping on fish	Peak spawning continues longer than 1 h	Incredible run

Boyd Walker's pioneering research on grunion provided the scientific basis for understanding the periodicity of the spawning runs in California. The Walker Scale, developed by K. Martin, M. Schaadt, and S. Lawrenz-Miller, is a way to assess the spawning run without actually counting the fish, for comparisons across space and time. Observations should start at or before the time of the highest tides on the four nights following a new or full moon, and continue for 2 h as the tide falls. The number of grunion should be assessed at the peak of the run; most runs start small but some may build up over time. At the peak of the run, how many fish are on shore at any given time? Are they on shore over a short or long period of time? Over a small area or a large extent of the beach? How long does the peak spawning aggregation last? (c) Grunion Greeters and Beach Ecology Coalition, used by permission.

Quality control for Grunion Greeter data

All data were evaluated by scientists before use in analysis. Incomplete forms or forms with no identification from the observer were discarded. Forms from dates or times that were unlikely for grunion to run, or from unclear locations were discarded. Grunion Greeters generally work in pairs to provide internal validation. If multiple observer groups on the same run gave different scores, more credence was given to a more experienced, trained observer. Multiple observers on the same run may have different scores because they observed from different locations on the shore; this was evaluated in the reports. Unusual or atypical reports for a location or time are followed up with an e-mail or phone call for additional details. Reports were verified on subsequent days by sampling for presence and density of clutches of eggs in the sand in some but not all cases.

For the purposes of this study and to avoid bias for data from certain beaches that have more frequent observations, we selected for each beach, only the highest Walker score reported from each spawning series (the four-day period following a new or full moon), from our verified data. Thus, a spawning series with few grunion on the first two nights after a full moon but a large run on the third would be represented only by the highest Walker score for that series.

Data were compared by beach location, county, and year using non-parametric statistics. Data from within the primary habitat of southern California, containing over 90% of the species population (Martin et al., 2013; Martin, 2015), were analysed separately from much sparser data for the central coast that followed a northward range extension in 2002 (Roberts *et al.*, 2007; Johnson *et al.*, 2009).

Results

Since 2002, over 4500 Grunion Greeters have provided over 5000 reports. This Grunion Greeter compilation is the most complete dataset for spawning runs of this species in existence, both in terms of geographic coverage and duration of observations. Reports have come from the entire range of the species, over 50 beaches in California and Baja California, Mexico. A northern range extension for spawning runs was discovered in 2002 in San Francisco Bay (Johnson *et al.*, 2009), followed by a northward range extension to Tomales Bay in 2005 (Roberts *et al.*, 2007). Many Grunion Greeters provided multiple observations over several years. Verified data from professional biologists using our methods to observe California Grunion as part of their monitoring efforts for coastal construction projects are also included.

Grunion Greeters reliably report the location of a run and its strength, based on both multiple independent observations of the same run, and on sporadic post-run sampling of beaches for clutches. In 445 runs with multiple observers, there is 87.6% agreement on the ranking of the Walker Scale. Even with disagreement, scores rarely differ more than one rank between observers.

The core of the habitat range is from the border of California and Mexico in San Diego County through Orange County and Los Angeles County through Malibu. From 2002 to 2010, typically the median run strength in this core area was W2, with a small percentage of the runs at W4 or W5 level (Figure 1). Large spawning runs (W4 and W5) have been seen in every year, on occasion. On a year with a low median, the number of large runs is very low as well. Although large runs still occurred in 2018, in 6 of the past 8 years, 75% of the runs have been W2 or lower in the core habitat for this endemic species.

Examining by county, runs in Los Angeles County, Orange County, and San Diego County have decreased in Walker Score over the time of the study (Figure 2). The five years 2004–2008 compared with the five years 2014–2018 show a significant decrease in the Walker Score of runs in the core habitat over time. This decline is consistent whether testing the three core counties together (Figure 1), looking within individual counties in southern California (Figure 2), or comparing across time within individual sentinel beaches (Figure 3). For the three core counties, significant differences are seen in frequencies of large and small runs between decades ($N = 1952$, $X^2 = 18.42$, $\mathrm{df} = 5$, $p < 0.01$). By county, these differences are also significant. For San Diego County, $N = 742$, $X^2 = 11.81$, $\mathrm{df} = 5$, $p < 0.037$; for Orange County, $N = 500$, $X^2 = 78.12$, $\mathrm{df} = 5$, $p < 0.0001$; and for Los Angeles County $N = 465$, $X^2 = 18.5$, $\mathrm{df} = 5$, $p < 0.01$).

Runs are highly variable in space and time. Although on a given night one beach may hold a large run, other beaches on the same night or run series may show little activity (Figure 4). The proportion of runs that are small (W0 or W1) has significantly increased over the past 15 years (Spearman Rank Correlation Coefficient $r_s = 0.57$, $\mathrm{df} = 13$, $p = 0.025$). For the three counties of San Diego, Orange, and Los Angeles, small runs were 48.9% of reports from five years between 2004 and 2008, and increased to

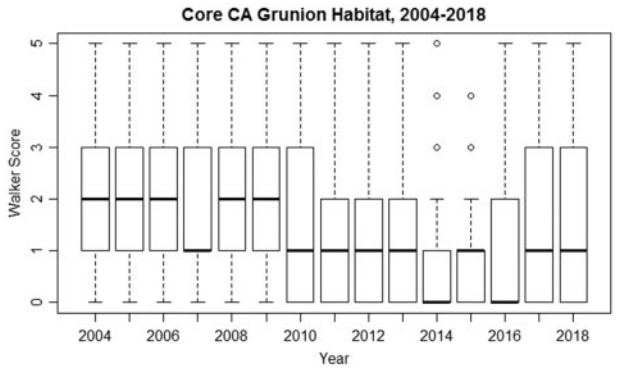

Figure 1. When the Grunion Greeters started, median (heavy bars) run size was a moderate but effective W2 in the core species habitat of southern California. Since 2010, the median of runs reported has been no higher than W1, meaning that at least 50% of the runs observed do not hold significant spawning activity. In two years (2014 and 2016) the median was W0, meaning that >50% of the time runs were predicted, few or no spawning fish were present. From 2011 to 2018, the median across the traditional habitat range typically was W1 and twice was W0. $N = 3462$.

65.4% of reports in the 5 years from 2014 to 2018. The proportion of runs at the W5 level has remained low and fairly consistent over the years, 1.58 ± 0.76% of reports in a given year.

Runs north of the core habitat seem to be increasing according to our reports, although not yet significantly (Figure 5). The areas of northward range extension around San Francisco Bay underwent local extirpation in 2008 (Martin et al., 2013) but have been re-colonized in 2014. Runs in locations in and around San Francisco Bay start later, in May rather than March, and continue into August, with the largest runs usually in July and August.

Grunion Greeters reported poaching (catching out of season, without a license, or with the use of any gear) in ∼20% of reports during closed season, and hunting or poaching for 93% of reports during open season. California fishers are not required to display a license while fishing. Informal questioning indicated that many adults hunting grunion during runs did not purchase a fishing license. Game Wardens were rarely observed during runs, <5 instances out of 5133 reports. Active hunting was often accompanied by loud, raucous crowds and high disturbance and prevention of spawning (Table 2).

Clutches of eggs are buried 10–20 cm deep in beach sand in a band no >1–3 m wide parallel to shore on the upper beach in the mid to high intertidal zone. Considering a narrow strip on average ∼3 m wide along 483 km of sandy beaches in southern California results in a total spawning habitat area of 1.45 km^2 for *L. tenuis* in its core primary habitat at the current time.

Discussion

California Grunion spawning runs can be assessed with the help of citizen scientists; in fact this may be the only way to obtain these extensive, hyperlocal data. The Walker Scale is currently used by professional resource biologists to monitor grunion runs for agencies such as US Army Corps of Engineers, California Department of Fish and Wildlife, California Coastal Commission, National Marine Fisheries Service, and California State Parks, as well as for public educational programs at Cabrillo Aquarium and Birch Aquarium at Scripps, among others (Martin et al., 2011). The Walker Scale is an effective, accurate, non-invasive

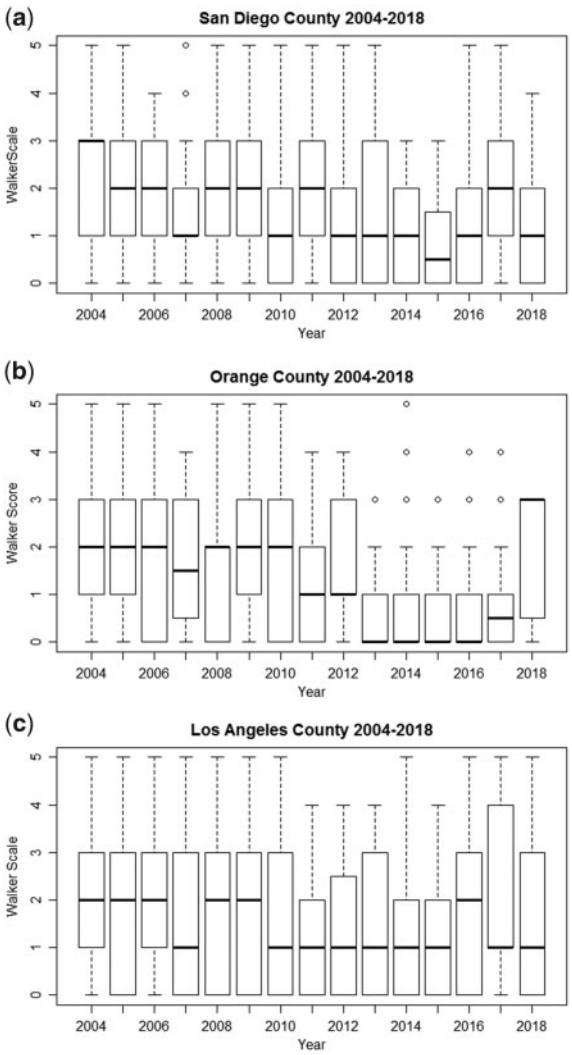

Figure 2. Reports from Grunion Greeters indicate that median (heavy bars) run size based on the Walker Scale have significantly decreased over time for each of the three southern counties. (a) San Diego, (b) Orange, and (c) Los Angeles.

although labour-intensive method for assessment of this species and other beach-spawning fishes. While the data from professional biologists monitoring grunion runs for coastal projects are certainly reliable, the number, locations, and frequency of these short-term projects are small relative to the substantial, long-term efforts of volunteer Grunion Greeters.

Even though large runs can still be observed, the median Walker Score for California Grunion spawning on shore has declined significantly across much of the core habitat range in the past ten years (Figure 1). This pattern is consistent for this endemic fish across the three coastal counties constituting its core habitat (Figure 2) and within individual beaches known historically for large spawning runs of grunion (Figure 3). The occasional presence of large spawning aggregations may create the illusion of abundance even when a population is depleted (Erisman *et al.*, 2011). These occasional large runs may tempt resource managers to believe that these kinds of runs are both more common and more widespread geographically than is the actual situation (Figure 4, Sadovy and Domeier, 2005).

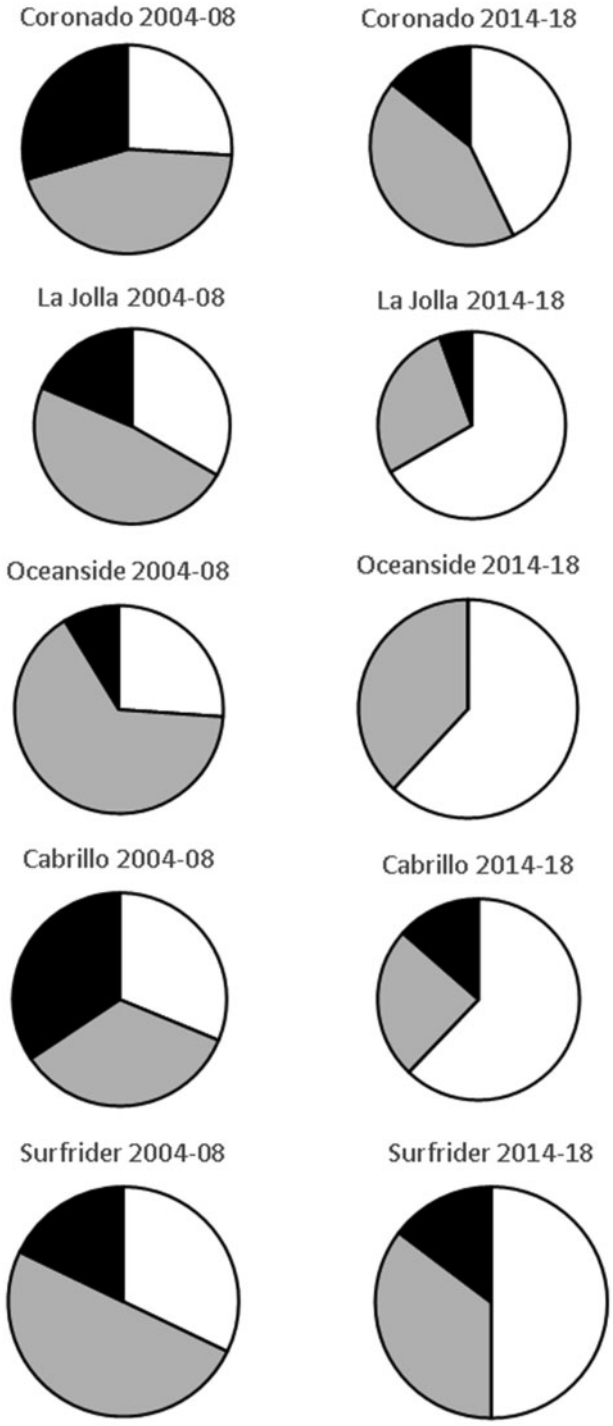

Figure 3. Proportions of runs that are small (W0 or W1), medium (W2 or W3), and large (W4 or W5) in five sentinel beaches in the core habitat range of southern California. Median runs dropped over the past decade and the likelihood of large runs decreased significantly in all cases.

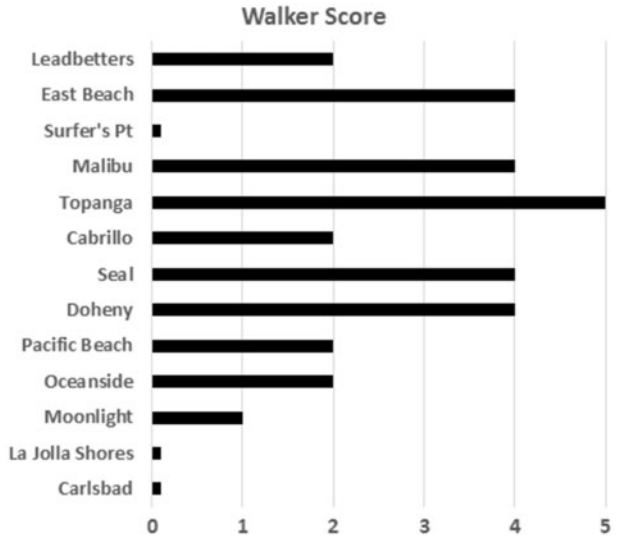

Figure 4. For one April night, beaches from San Diego, Orange, Los Angeles, Ventura, and Santa Barbara counties show the variability in run strength. The median run score is W2 for these 12 beaches.

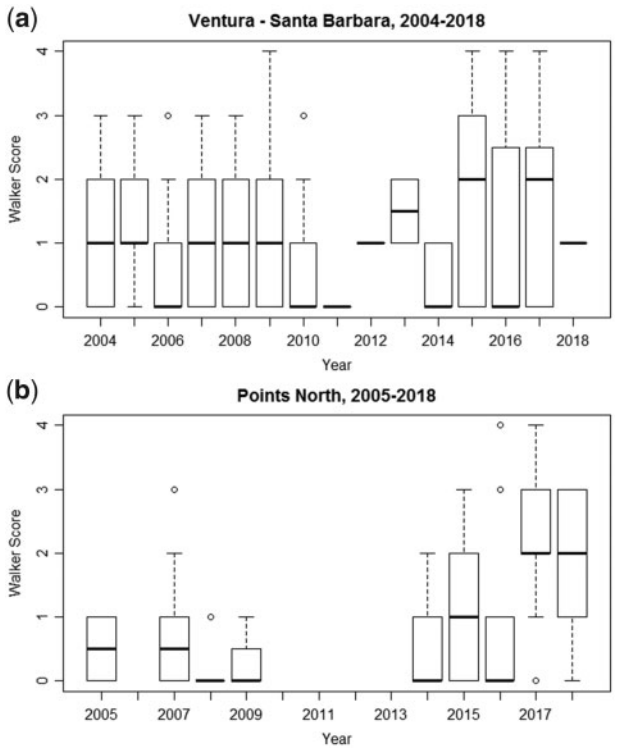

Figure 5. Runs appear to be increasing north of the core habitat range, but these differences are not significant. (a) Ventura and Santa Barbara Counties are north of the core habitat but within the traditional spawning range of *L. tenuis*. (b) *L. tenuis* colonized San Francisco Bay and points north in 2002, and then was locally extirpated by 2008. They returned in 2014 and runs are increasing in strength. Heavy line is median.

On the basis of reports from Grunion Greeters and resource biologists, California Grunion appear to be both shifting their habitat range northward (Figure 5) and decreasing in numbers in the more southern habitats (Figures 1 and 2). Warming trends in ocean water and the atmosphere may be affecting this species (Martin, 2015), along with ocean acidification (Tasoff and Johnson, 2019). There is an environmental component to sex determination of *L. tenuis*, so that warmer temperatures during

Table 2. Grunion Greeter reports indicate high levels of disturbance of spawning by people hunting.

"Unruly THOUSANDS, some in water, all making noise. Looked like some sort of post-apocalyptic marine Mad Max."
"The few grunion that actually came up onto the beach were automatically grabbed by poachers. There were probably 20–30 people taking the fish last night."
"Hundreds of people on beach, many using buckets and strainers to collect fish; informed them of regulations." (report from a marine biologist with California Department of Fish and Wildlife).
"A large group of people gathered at least 10 plastic grocery bags full of grunion and women were walking behind them laughing and kicking the grunion. Many people were taking several hundred grunion home in trash bags."
"Over a hundred people in a frenzy to get the few fish that came in with each wave. Lots of screaming kids, dogs, and flashlights."
"Three families harvested hundreds."
"One goofy guy was running wildly up and down the beach with a flashlight and grabbing at any fish that started to spawn."
"Hunting–Splashing into water, capturing in water or at surf's edge, noisy, yelling, screaming."
"Lots of youngsters excited and splashing in the shallows chasing grunion. Probably they harvested 200 or 300. There were maybe 50+ in groups of 4–10 running to and fro."
"There was a very rowdy group of ∼10 people, catching and collecting the grunion during the entire run, yelling and chasing after the fish into the water, up to even waist deep!"
"Bad behavior: Kicking fish, throwing, stepping, or jumping on them."
"TONS of people. At the first big sighting of fish the people rushed the water & the grunion fled."
"There was a pack of ∼12–14 non-English speaking people stomping on and kicking fish on the beach. One run of grunion had started and when these people behaved in this way that run went back into the water and did not return to that location."
"Poachers continuously ignored our information very frustrating. Picking them up filling buckets and stepping on them and ripping them in half."
"Fish tried to come ashore but a crazy mob of people lined beach with buckets & lights."

early life result in greater proportions of males (Brown *et al.*, 2014). Of more immediate concern, their critical spawning habitat is also declining (Dugan *et al.*, 2008; Vitousek *et al.*, 2017; King *et al.*, 2018), potentially concentrating the spawning population into fewer locations on shore. The spawning zone of *L. tenuis*, the upper beach between the mid and high intertidal zone (Martin *et al.*, 2006), is also the beach area that is most vulnerable to loss by coastal squeeze (Dugan and Hubbard, 2010; Schooler *et al.*, 2017). The core spawning habitat total area of 1.45 km^2 for *L. tenuis* is smaller than Dodger Stadium or the Los Angeles International Airport. The minimum size is 25 km^2 for one Marine Protected Area (MPA) in California (Botsford *et al.*, 2014), in a network of over 100 MPAs. This critical habitat for *L. tenuis* is likely to decrease, and is already <0.001% of the area of the California MPA network.

Even though the species has managed to shift its habitat and colonize some northern bays, the northern ecotype grows to a smaller adult size, spawns less frequently, and produces significantly fewer, smaller eggs per clutch (Johnson *et al.*, 2009; Martin et al., 2013). For these reasons the northern populations are more vulnerable to ecosystem perturbations and local extirpation than the populations in the traditional habitat. In addition, the more northern populations spawn on a different annual schedule than the southern populations of this species, and therefore the peak run times of the northern populations are not protected by the current closed season of April and May. These northern fish are neither different genetically (Johnson *et al.*, 2009; Byrne *et al.*, 2013) nor are they different in physiological response to temperature (Brown *et al.*, 2012) from the southern grunion, so this habitat shift appears to be restricted to areas of bays that are warmer than the waters of the open ocean.

Fished species that form spawning aggregations face an increased extinction risk (Sadovy and Erisman, 2012). Modern conservation practices almost universally protect the reproductive period and spawning aggregations of species (Hutchings, 2001). The regulations for fishing on California Grunion do the opposite by specifically targeting the spawning aggregations, striking this species at its most vulnerable and critical time, disrupting its ability to produce the next generations. Fishing on large aggregations can mask population declines or collapse (Erisman *et al.*, 2011).

Regulations put in place to protect the endemic California Grunion during spawning runs are rarely and unevenly enforced. Poaching during closed season is common on some urban beaches, and reported during ∼20% of closed season observations. Collection of spawning fish by people with or without fishing licenses is nearly universal during open season, identified in the vast majority of open season reports, disrupting runs, and preventing reproduction while removing ripe adults from the population (Table 2). Many grunion hunters do not fish for any other species, and do not possess fishing licenses. Children, not required to have a license, are very effective hunters (see Supplementary Material). Thus the potential number of people hunting California Grunion is far greater than the 2.5 million sport fishing licenses that were sold in California in 2016 (https://www.wildlife.ca.gov/Licensing/Statistics#SportFishingLicenses).

Data from entrainment surveys are the only other long term dataset available for *L. tenuis*. The entrainment data conforms with CalCOFi nearshore trawl data pattern (Miller and McGowan, 2013). For California Grunion, usually less than one, or fewer than two individuals are seen per million cubic meter flow (E. Miller, pers. comm.). Compared with other local silverside fishes, for Topsmelt *Atherinops affinis* 14.6, and Jacksmelt *Atherinopsis californiensis* 39.4 are present per million cubic meters flow at a peak. Both *A. affinis* and *A. californiensis* are fished commercially and recreationally, with hundreds of thousands landed each year (Vejar, 2013). These fishery-independent surveys indicate at a minimum that *L. tenuis* abundance is substantially lower than its sister silverside species of similar size.

Trawl surveys of San Diego Bay (Williams *et al.*, 2016) and San Francisco Bay (Johnson *et al.*, 2009) show large population fluctuations from year to year. In 2016 Williams *et al.* suggested a stock estimate for *L. tenuis* in San Diego Bay of 785,183 fish, but 92% were juveniles in surveys taken during the spawning season. This suggests substantially fewer, only 62,815 adult grunion in

San Diego Bay in 2016. The human population of San Diego's metropolitan area is 3.1 million, http://worldpopulationreview.com/us-cities/san-diego-population/ not including the city's 35 million tourist visitors per year (https://www.sandiego.org/about.aspx).

Because of the tendency of this species to aggregate, we hypothesize that even if fewer fish are present in the total population, large runs will still occur on occasion. Our observations suggest that it is likely that a minimum number of fish must be present for a spawning run to occur. Runs with fewer than a hundred individuals usually do not include spawning events or egg deposition. Therefore the presence of only small numbers of fish during a run suggests unsuccessful reproduction. As runs decline, fewer observations can be made. If the population declines, fewer locations will hold runs, and those runs will occur less frequently. The consistent pattern of decline in median run size is of great concern for this endemic indigenous species. We suggest it is possible that the numbers of adult fish could drop too low for successful spawning even when some members of the species are present and ripe.

The sister species, *Leuresthes sardina* the Gulf Grunion, is endemic to the northern Gulf of California (Bernardi *et al.*, 2003). This species shares the beach-spawning habits of *L. tenuis* (Thomson and Muench, 1976). *Leuresthes sardina* appears on the IUCN Red List as "Near Threatened" because of potential habitat loss and human interference (Findley et al., 2010). The California Grunion *L. tenuis* may face even greater threats because of larger human populations and more coastal development in California compared with Mexico.

In summary, large spawning runs still occur for *L. tenuis*, but smaller runs have been much more common in the present decade than in the previous one in its core habitat range. There may be fewer California Grunion, or the fish may not able to spawn as frequently as in the past. Either way, reproductive output appears to be lower. For those populations that have moved north, the shift in habitat comes at the cost of smaller size and reduced clutch size, as well a shift in spawning season that is shorter and holds less frequent spawning.

We strongly encourage increased protection of the spectacular spawning runs for this charismatic indigenous endemic marine fish. Its status as a managed species and an indicator species for climate change warrant greater concern. At minimum, a return to closed season from April to June, as originally designated in 1927, would help protect the southern population from fishing pressure. We recommend that the *L. tenuis* population on the central coast, in Monterey Bay and around San Francisco Bay, should be completely closed to take, as the populations there appear to be too small to withstand any fishing pressure.

Outreach with the Grunion Greeters may help shift public perception of this species and their interaction with its runs. Greeters report with dismay that those hunting *L. tenuis* during its spawning runs exploit the vulnerability of these fish when out of water (Table 2). Unlike typical fishers who respectfully interact with the resource and take no more than they will use, grunion hunters often say they are following some sort of (perhaps misguided) cultural tradition. They scream and yell while running to wildly chase the fish that are trying to spawn. They sometimes step on the fish in their haste, breaking their backs; then toss them into buckets to expire. Instead, we hope that more and more people will come to quietly observe the run spectacle on its own terms, without disturbing the fish, as watchable wildlife. All should be able to simply enjoy the amazing sight of California's original surfers dancing on the beach.

Supplementary data

Supplementary material is available at the *ICESJMS* online version of the manuscript.

Acknowledgements

We are thankful for funding from US Fish & Wildlife Service, "Connecting People with Nature," California Coastal Commission Whale Tail Program WT-13-22, National Science Foundation DBI 1062721, National Science Foundation, REU-1560352, USC Sea Grant College – Urban Oceans Program NOAA – NA14OAR4170089/Subaward 6094463, National Marine Fisheries Service, Southwest Region, Habitat Conservation Division Contract 8-819, National Geographic Society CRE 8105-07, and Pepperdine University. We are grateful to thousands of Grunion Greeters for their long walks on moonlit beaches. RD Martin provided helpful comments on the manuscript and C Davis, T Furlong, and M Perrault assisted with analyses.

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Handling editor: Howard Browman

From: FGC
Sent: Wednesday, July 31, 2019 9:19 AM
To: Kinchak, Sergey@FGC; Cornman, Ari@FGC
Subject: Fw: Traditional Archery (2019-17) and Spring Bear Hunting (2019-16) Seasons Petitions
Attachments: Spring bear hunting petition..docx; Traditional Archery equipment season petition.docx

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From: Preston Taylor
Sent: Wednesday, July 31, 2019 09:11 AM
To: FGC <FGC@fgc.ca.gov>
Subject: Traditional Archery (2019-17) and Spring Bear Hunting (2019-16) Seasons Petitions

Hello FGC,
I would like to submit an amendment with new authority codes to my two petitions: Traditional Archery Season 2019-17 and Spring Bear Hunting 2019-16 (both are attached). Also, I'd like to request a waiver of the 10-day response period please.

Let me know if you need any more information, and thank you for taking the time to review my requests. I look forward to speaking with you about these petitions.
Preston Taylor

Tracking Number: (2019-16 AM 1)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)
Name of primary contact person: Preston Taylor
Address:
Telephone number:
Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: CCR T14-365 (bear). Authority cited: Sections 86, 200, 202 and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1 and 207, Fish and Game Code.

3. Overview (Required) - Summarize the proposed changes to regulations: Institute a spring bear hunting season. It could be limited to existing Wilderness Areas, or zones with high bear densities.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: Hunting is a healthy and productive activity, which contrasts this age of electronics and sedentary lifestyles. Bear hunting provides great meat, lard, and hides. Spring bear hunting would provide a new outdoor reacreational opportunity for California hunters. Lots of hunters travel out of this state to hunt bears elsewhere in the west in the spring.

SECTION II: Optional Information

5. Date of Petition: July 10, 2019

6. Category of Proposed Change
☐ Sport Fishing
☐ Commercial Fishing

☐ Hunting
☐ Other, please specify: spring bear hunting

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)
☐ Amend Title 14 Section(s): 365 bear hunting
☐ Add New Title 14 Section(s):
☐ Repeal Title 14 Section(s):

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Not applicable.
Or ☐ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency:

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents:

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: Increased bear tag sales. Increased economic impact in the spring time.

12. Forms: If applicable, list any forms to be created, amended or repealed:

SECTION 3: FGC Staff Only

Date received: Received by email on Wednesday, July 31, 2019 at 9:19 AM

FGC staff action:
☑ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority

Tracking Number 2019-16 AM 1

Date petitioner was notified of receipt of petition and pending action: August 1, 2019

Meeting date for FGC consideration: October 9-10, 2019

FGC action:
☐ Denied by FGC
☐ Denied - same as petition _____
Tracking Number
☐ Granted for consideration of regulation change

From: FGC
Sent: Wednesday, July 31, 2019 9:19 AM
To: Kinchak, Sergey@FGC; Cornman, Ari@FGC
Subject: Fw: Traditional Archery (2019-17) and Spring Bear Hunting (2019-16) Seasons Petitions
Attachments: Spring bear hunting petition..docx; Traditional Archery equipment season petition.docx

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From: Preston Taylor
Sent: Wednesday, July 31, 2019 09:11 AM
To: FGC <FGC@fgc.ca.gov>
Subject: Traditional Archery (2019-17) and Spring Bear Hunting (2019-16) Seasons Petitions

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I would like to submit an amendment with new authority codes to my two petitions: Traditional Archery Season 2019-17 and Spring Bear Hunting 2019-16 (both are attached). Also, I'd like to request a waiver of the 10-day response period please.

Let me know if you need any more information, and thank you for taking the time to review my requests. I look forward to speaking with you about these petitions.
Preston Taylor

Tracking Number: (2019-17 AM 1)

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Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)
Name of primary contact person: Preston Taylor
Address:
Telephone number:
Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: CCR T14-354 (archery equipment regulations); CCR T14-361 (archery deer hunting); CCR T14-366 (archery bear hunting). Authority cited: Sections 200, 203, 240 and 265, Fish and Game Code. Reference: Sections 200, 203, 203.1, 265, 2005 and 4370, Fish and Game Code; Authority cited: Sections 200, 203, 265 and 4370, Fish and Game Code. Reference: Sections 200, 203, 203.1, 255, 265 and 4370, Fish and Game Code.; Authority cited: Sections 200, 202 and 203, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1 and 207, Fish and Game Code.

3. Overview (Required) - Summarize the proposed changes to regulations: Institute a Traditional Archery equipment season for deer and bear in the Marble Mountain Wilderness and Trinity Alps Wilderness. Traditional Archery equipment includes: selfbows (bows carved from trees), laminated longbows and recurves, and wood arrows. Proposed dates for the season, either: 1) Two weeks prior to the start of the regular archery season in the B-zones, or; 2) Two weeks after the close of the general B-zone season.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: The archery season was originally intended to provide hunters with a time for greater challenge and to hunt with less people in the woods. The advent of modern archery gear has made the learning curve much faster, thus the woods during the "primitive" weapons season is getting more crowded. The origins of sport-archery hunting is rooted right here in northern California: Ishi, Dr. Saxton Pope, and Art Young proved that hunting with homemade archery tackle was effective on all North American big game, and started an awakening in the world of archery, which eventually spread to Howard Hill and Fred Bear and

led to the creation of a primitive weapons hunt: the Archery Only season. Those of us who craft selfbows and wood arrows, who hunt with longbows and recurves, and who spend countless days in the field trying to get within 10 yards of a wary buck, we find ourselves overwhelmed and overpowered by the modern archery industry. The romance and difficulty of bow-hunting has become watered down thanks to rangefinders, GPS sights, Bluetooth arrow nocks, etc. I propose the Traditional Archery season be limited to two wilderness areas: the Marble Mountains and Trinity Alps Wilderness. These are already considered primitive areas; therefore, hunting with traditional tackle fits well with the intentions of the Wilderness Act. Hunting with Traditional Archery tackle is no less ethical than other hunting methods. I have killed a number of big game animals with my longbow and watched them die in less than 5 seconds, which is quicker than some rifle killed animals. The new season could be held prior to the current archery season or after the close of the general season in the B-zones.

SECTION II: Optional Information

5. Date of Petition: July 10, 2019

6. Category of Proposed Change
☐ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☐ Other, please specify: Archery hunting

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)
☐ Amend Title 14 Section(s):
☐ Add New Title 14 Section(s): 354, 361, 366. Create a new Traditional Archery equipment season.
☐ Repeal Title 14 Section(s):

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Not applicable.
Or ☐ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency:

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Oregon Department of Fish and Wildlife has instituted 2 Traditional Archery equipment seasons, and is considering more opportunities.

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: There has been a resurgence of interest in traditional archery since the advent of movies with archers in them. The new traditional equipment

season could attract new hunters, which could raise license sales. A longer season will result in economic growth for small towns and businesses around the hunting unit.

12. Forms: If applicable, list any forms to be created, amended or repealed:

SECTION 3: FGC Staff Only

Date received: Received by email on Wednesday, July 31, 2019 at 9:19 AM

FGC staff action:

- ☑ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number 2019-017 AM 1

Date petitioner was notified of receipt of petition and pending action: August 1, 2019

Meeting date for FGC consideration: October 9-10, 2019

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
  Tracking Number
- ☐ Granted for consideration of regulation change

From: Chris Clardy <Chris.clardy@colfax-ca.gov>
Sent: Monday, July 1, 2019 6:12 PM
To: FGC <FGC@fgc.ca.gov>
Subject: RE: Rana boylii - Status Report

To Whom it Concerns,

In regards to the Rana Boylii – As stated below, Department of Fish and Wildlife(DFW) was given a six month extension by the Fish and Game Commission (FGC) to complete the status review report, making the due date January 7, 2019. The formal acceptance of the status review was expected at the February 6, 2019 meeting. At the February 6, 2019 DFW did not provide FGC the status review report but instead recommended the item be continued to a "future" FGC meeting. The request for a continuance was passed on consent without discussion. Pursuant to Fish and Game Code 2074.6 the Commission may grant an extension of **up to** six months. With FGC's approval to continue receipt of DFW's status report to a "future" FGC meeting, FGC approved an action extending status review beyond an acceptable timeframe and not pursuant to Fish and Game Code.

With DFW's failure to provide a status review report to FGC in a timely manner pursuant to F&G 2074.6, the City request that the Commission find the petitioned action is not warranted and the process ended.

Regards,

Chris Clardy
COMMUNITY SERVICES DIRECTOR
(530) 346.2313 • Office
(530) 368.2150 • Direct
Colfax City Hall • PO Box 702, Colfax, CA 95713 • www.Colfax-CA.gov

From: FGC [mailto:FGC@fgc.ca.gov]
Sent: Monday, October 8, 2018 9:18 AM

To: Chris Clardy
Subject: RE: Rana boylii - Status Report

Dear Chris Clardy,

At its June 20-21, 2018 meeting, the California Fish and Game Commission (Commission) approved the request of the California Department of Fish and Wildlife (Department) for a six month extension to complete the status review report. You may review the request at http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=159052

We expect that the Commission will formally receive the status review report at its February 2019 meeting and take final action on the petition at its April 2019 meeting.

If you have not already done so, you may sign up to receive Commission agendas and notices via our list serv. From our home page (www.fgc.ca.gov), click on the link "Join our electronic mailing list to receive meeting agendas and announcements."

If you have further questions, please let me know.

Sherrie F.
Commission staff

From: Chris Clardy <Chris.clardy@colfax-ca.gov>
Sent: Friday, October 5, 2018 5:25 PM
To: FGC <FGC@fgc.ca.gov>
Subject: Rana boylii - Status Report

To whom it concerns,

I am trying to locate the status report for Rana boylii (Foothill Yellow Legged Frog). Notice of Findings was recorded June 27, 2017. Any information would be greatly appreciated.

Regards,

Chris Clardy
COMMUNITY SERVICES DIRECTOR
(530) 346.2313 • Office
(530) 368.2150 • Direct
Colfax City Hall • PO Box 702, Colfax, CA 95713 • www.Colfax-CA.gov

From:
Sent: Monday, July 15, 2019 2:41 PM
To: FGC
Subject: Litigation regarding Calaveras Reservoir

To whom it May Concern,

It was suggested to me that I should make this request to the Fish and Game Commission to file suit against the San Francisco Public Utilities Commission for violating Fish and Game code 5943, the California Public Trust Doctrine, Health and Safety Code 117040 et. seq., California Code of Regulations (Public Access for Fishing) 23 CA ADC § 781, and California Constitution 25, Art. 1.

The SFPUC's position is that Health and Safety Code 117040 and 117045 allow them to keep the reservoirs closed to the public. This issue however has already been addressed and resolved by the California Supreme Court. In *State of California v. San Luis Obispo Sportsman's Assn*. The court specifically addressed former Health and Safety Code section 4462 (now 117040), and declared that it is not incompatible with Fish and Game Code 5943:

> *"Appellants also assert that the provisions of section 5943 of the Fish and Game Code conflict with section 4462* [117040] *of the Health and Safety Code, which provides that a public agency owning or operating a domestic water supply reservoir "may open to public fishing all or any part of the reservoir and its surrounding land." We see no express conflict between these provisions and thus no demonstrated legislative intent that the later-enacted Health and Safety Code provision should prevail over or impliedly repeal Fish and Game Code section 5943. (See In re Thierry S. (1977) 19 Cal. 3d 727, 744 [139 Cal. Rptr. 708, 566 P.2d 610].) On the contrary, the statutes are compatible and congruous. Section 5943 requires that a reservoir which results from the damming of waters naturally frequented by fish be opened for fishing. Section 4462 makes it clear that an owner or operator of a domestic water supply reservoir has the power to open it to public fishing subject to the restrictions set forth in other provisions of the Health and Safety Code (e.g., §§ 4463, 4464). Although a conflict could arise between section 5943 and a domestic [22 Cal. 3d 451] water supply reservoir owner's duties under the Health and Safety Code, the evidence here reveals no such conflict."*
> *State of California v. San Luis Obispo Sportsman's Assn. 22 Cal.3d 440*

Additionally, I want to add that the SFPUC is also required under F&G Code 5943 (And Cal. Const. 25, Art 1), to open San Antonio Reservoir, Crystal Springs Reservoirs, San Andreas Lake, the Alameda Creek, and any other reservoirs or *waters naturally frequented by fish*, owned by the City and County of San Francisco, as those are "public lands" of the "State".

> *"A county is a legal subdivision of the state and references to the "state" may include counties." Baldwin v. County of Tehama (1994) 31 Cal.app 4th 166, 36 Cal.Rptr.2d 886*

note: "San Mateo Creek once hosted coho salmon as evidenced by specimens collected by Professor Alexander Agassiz of Harvard University in the 1850s and 1860s.[10][11] The historical presence of coho salmon is also suggested in an 1877 description by Charles Hallock: "Pilarcitos, one of the Spring Valley Water Company's reservoirs, is now well filled with fair-sized trout, and San Andreas, chiefly with silver salmon of generally moderate size."

> *Fish and Game Code 5943:*
> *(a) The owner of a dam shall accord to the public for the purpose of fishing, the right of access to the waters impounded by the dam during the open season for the taking of fish in the stream or river, subject to the regulations of the commission.*
>
> *(b) Subdivision (a) does not apply to any impoundment of water by a dam that is wholly located on privately owned land that is primarily agricultural or residential in nature* ***if the impounded waters are from a stream or river that is not naturally frequented by fish*** *and if the dam does not prevent the free passage of fish over or around the dam. The Legislature finds and declares that this subdivision is intended to be declaratory of existing law.*

the SFPUC is required to develop a fishing program on *all waters* owned by the City and County of San Francisco as required by law, excepting those bodies of water that are not treated and purified after withdrawal from the reservoir, **if all three of the following apply** in compliance with H&S Code 117050:

1) they are used as a regulating reservoir to meet daily or peak consumption demands,
2) and they are also used as a terminal reservoir to a water collecting facility,
3) and they are also used as a distribution reservoir from which water may be supplied for drinking or domestic purposes

This fact was also established in the same California Supreme Court case:

> "Appellants assert that they have a duty to prevent fishing at the reservoir because such fishing is proscribed by section 4464 [Currently 117050] of the Health and Safety Code. That section provides: "Public fishing shall not be conducted in a reservoir or on its surrounding land if the reservoir is used as a regulating reservoir to meet daily or peak consumption demands and as a terminal reservoir to a water collecting facility and as a distribution reservoir from which water may be supplied for drinking or domestic purposes without full purification treatment after withdrawal from the reservoir." (Italics added.)
>
> Appellants would have us read this provision in the disjunctive, thereby substituting "or" for "and." However, it appears that the clear meaning of this statute is that fishing is prohibited when a reservoir is being used in all three capacities..."
> *State of California v. San Luis Obispo Sportsman's Assn*. 22 Cal.3d 440

The State lands Commission has expressed interest in assisting by way of an Amicus Brief.

Please provide me with any information regarding this request.
thanks
Tim Dummer

Donald W. Baldwin
[redacted]

July 8, 2019

Commissioner of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244

Dear Melissa Miller-Henson:

I am writing to you out of concern and frustration that I am experiencing with the online process of securing a hunting license, tags and permits. To access one's personal profile, all that is needed is a California driver's license number, a name and date-of-birth. Of course, all that is needed to learn this information is a copy of a California driver's license. I cannot understand why access to this process is not password-protected, and a penalty clause for misuse be included.

Here is how this lack of concern for security and privacy has affected my family. I am a grandfather who is passing on the tradition of hunting to his grandsons. Along with this effort, I assist my grandsons with their hunter safety certificates, hunting licenses and tags. I pay for these requirements and I personally take my grandsons on hunting trips and provide them with the opportunities. I do this with my daughter's, their mother's permission and blessing. I am the only one in the family with the interest to do so.

My oldest grandson, recently turned 17 and obtained his California driver's license. To update his profile on the website, we went down to a local state office and provided the necessary information/documentation to update his profile with his newly acquired driver's license. Previously, and as you know, it is the procedure to use one of his parent's state i.d., he used his mother's California driver's license.

A few days after the visit to the local office, I queried the data base to ensure the profile had been updated. To my amazement, I found that someone had changed his mailing address and his e-mail contact information to that of his father's. My daughter is divorced from the child's father, she has a court-ordered restraining order against him that resulted from domestic violence and she has 100 percent legal custody of my grandsons. So now the father as it has been set up, will receive my grandson's hunting license, his tags and permits, which based on our past experience, neither would he tell us that he received or would he turn these docments over to the persons who need them.

So, you see our dilemma, the father who cannot possess a firearm, who has no interest in hunting, has never taken his son's hunting, nor paid for hunting related expenses is now in control of the information and receipt of documentation required for his son to hunt.

Of course, I changed the state's record to reflect accurately the situation. Yet this can, under current procedures, be changed in an instant. Again, it bothers me that this process was implemented without appropriate safeguards. Aside from the obvious, I cannot imagine the extent of damage and misuse, someone could wreck upon the system and whatever laws might be broken.

I urge to see that this problem is addressed and resolved quickly. Please acknowledge receipt of this letter. I can be reached at [redacted] should you have any questions concerning this matter.

Sincerely yours,

Donald Wayne Baldwin
[redacted]

Cc: CRPA

Eric Skylar (Response Requested) 7/22/19

2019 JUL 25

Calif. Dept of Fish and Wildlife

PO Box 94209

Sacramento, California 94244

Dear Mr Sklar:

Thank you for accepting my families in put into the issue of the YELLOW-LEGGED FROG on the Endangered species list. Specifically this pertains to the seasonal dam placed in the Stuarts Fork of the Trinity River by the Trinity Alps Resort for the last 80 years.. I have personally fished, swam and recreated in the Stewards Fork drainage for over 50 years. I attended the inspection and conference with the resort when Fish and Wildlife was going to issue the permit and know that the permit was approved for five years.

I am a retired Register Professional Forester who ran the timber harvest Environmental review team for the Humboldt Ranger unit and the Northern California area of Cal Fire. I Worked with Fish and Wildlife to provide protection measures for the Fisheries and Wildlife effected by timber harvesting. I later managed the Calif. Forest Improvement Program and funded habitat restoration for the Coho salmon in the Scot River and the Red Band Trout in Goose Lake. I also worked with Fish and Wildlife to repair various riparian areas in Northern California for fish and other species associated with the wet areas or streams. I am therefore knowledgeable in protection of endangered species and the need for biodiversity.

However, stopping the permit process by blanketly claiming the frog endangered when there is no evidence showing harm is a violation of law and ethics. In this case there is also a blatant violation of the law by the commission having to do with not following due process and unequal application of the law. Other agencies and companies are allowed hundreds of stream crossing permits approved by Game Wardens often not educated in engineering or even biology and stopping the process because your not sure of the impact on the frog or it's listing.

This is a naturally active watershed with sever erosion from deep seated geological movement and surface erosion from road construction and logging

sometimes activating deep seated slides. The Stuarts Fork is periodically scowered by landslides caused by floods and debris avalanches from top to bottom. The effects of this are significant removal of the riparian areas along the stream bed and the complete loss of amphibian habitat. The resort for the last 80 years has placed a dam in the stream actually improving fish and amphibian habitat. With some endangered species there are management practices that are a benefit to the species like the slow water created by dam that breaks up the riffling throughout the resort. Fish and Wildlife approved an approach and crossing downstream from the resort that has caused land sliding and removed important riparian habitat. This permit was approved to get along with the timber company at a loss of habitat. Therefore, it is not right in any sense to not approve the resorts request for a multi-year permit that uses instream cobbles, improves the stream morphology and has been approved for 80 years with NO documented evidence of adverse impact.

This stream like many others in the area are constantly changing naturally through evolution and species may naturally evolve out of this ecosystem and others may find this a more suitable place. As this resort tries to lessen its impact by its management practices species composition will continue to change because of global warming and the best we can do is slow the impact which will be insignificant in the broader sense. The loss of the swimming hole to the kids and resort would be like stopping logging to the lumber company.

We therefore request that you approve this permit based on the improvement of instream habitat and a track record of NO significant adverse impacts until there is a definitive burden of proof met that there is significant impact and the resort has an opportunity to mitigate any issue.

Sincerely

Tom & Pat Randolph Tom Randolph Pat Randolph

PS Before you continue down this path, I would contact the Fish and Wildlife Commission's Attorney General Representative an inquire about the legality of how your proceeding and the liability to the Department and Commission.

Cc Margo Gray Owner/Operator- Trinity Alps Resort

From: Gretchen Whisenand [redacted]
Subject:
Date: June 4, 2019 at 10:24 AM
To:

Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Dear Members of the California Fish and Game Commission,

Please vote to protect four native bumble bees-the western bumble bee, Franklin's bumble bee, Crotch's bumble bee, and Suckley cuckoo bumble bee-by making them candidates for the California Endangered Species list. Indisputable scientific data shows that these four bee species are in steep decline and urgently warrant protection under the California Endangered Species Act. Three have been classified by the International Union for the Conservation of Nature's Bumblebee Specialist Group as either Endangered or Critically Endangered. The bumble bee research community has concluded that they face a high degree of extinction risk.

Current regulations have proven insufficient to reverse the sharp decline in these four bee species. Protection under our state endangered species act is their last line of defense.

The diversity and strength of bee populations is critical to maintaining a healthy and robust food supply in California and beyond. One out of every three bites we eat is dependent on pollinators such as these bumble bees.

By acting on this petition to protect these four native bee species, California has an opportunity to demonstrate how an individual state can lead the nation in protecting a diverse suite of pollinators, benefiting both agriculture and natural areas. All the more important in these distressingly retrograde times!

For these reasons, I strongly urge the California Fish and Game Commission to vote to make these four native bee species candidates for the endangered species list.

Sincerely,
Gretchen Whisenand
Gretchen Whisenand

From: Joan Herskowitz
Sent: Sunday, July 21, 2019 9:33 PM
To: FGC
Subject: California Grunion Fishery Regulations

Dear California Fish and Game Commissioners,

California grunion are known for their spectacular spawning behavior as they come completely out of the water on sandy beaches during certain spring and summer nights. However, this behavior leaves them extremely vulnerable during the months when grunion fishing is permitted. In addition, their habitat is shrinking due to sea-level rise and coastal development. Since 2002 thousands of volunteers, including Buena Vista Audubon Society members, have reported their observations from spawning nights indicating a decline in the grunion population. This situation is a concern for the future of this iconic fish that is an integral part of the coastal marine ecosystem.

Therefore, on behalf of the Buena Vista Audubon Society, I'm writing to inform you of our support for the following changes in the management of the grunion fishery. We support proposals to increase grunion protection by returning to the original grunion fishing closure period of April through June in southern California and through August for beaches north of Pt. Conception, where the runs occur later. Also, currently there is no limit on how many fish are allowed to be taken, so we support the proposal to add a "bag limit" of 10 fish in place of the current "no limit" catch.

With these changes, there is a greater likelihood of achieving a sustainable grunion population. It will also allow future generations to witness this unique fish and its spectacular midnight runs. Thank you for consideration of our views on this matter that is important both to the ecology of our coast and to positive recreational interactions of residents and visitors with marine wildlife.

Please confirm receipt of this email.

Sincerely,
Joan Herskowitz
Conservation Chair
Buena Vista Audubon Society

COUNTY OF ALPINE
Board of Supervisors

July 16, 2019

Melissa Miller-Henson
Acting Executive Director
California Fish and Game Commission
P.O. Box 944209, Sacramento, CA 94244-2090

Susan Ashcroft
Acting Deputy Director
California Fish and Game Commission
P.O. Box 944209, Sacramento, CA 94244-2090

Kari Lewis
Chief
CA Department of Fish & Wildlife
P.O. Box 944209, Sacramento, CA 94244-2090

Re: Petition #2018-016, Hope Valley Wildlife Area

Dear Mss. Melissa Miller-Henson, Susan Ashcroft, and Kari Lewis,

Thank you very much for meeting with us on Wednesday, June 26, 2019 to discuss our concerns about the application of the Lands Pass Program to the Hope Valley Wildlife Area. We think that we have found the answer to the Fish and Game Commission's (F&G) obligation to the Legislature to show that non-consuming users of the Hope Valley Wildlife Area are contributing to the maintenance of the area. Funding has been available and contributed from two sources:

1. The California Department of Fish & Wildlife (DFW) has $169,000 in a maintenance fund for the Hope Valley Wildlife Area that is not being used to maintain the area.
2. Alpine County, local businesses, and community organizations are contributing over $25,000/year to the maintenance.

Northern California Power Agency Fund
In 1988, when the Hope Valley Wildlife Area was acquired by the then California Department of Fish & Game, the Northern California Power Agency committed $200,000 to its future maintenance. As of today, approximately $169,000 remains unspent and should be used by DFW for any required maintenance. For details about this fund, please contact Cahn Nguyen with the DFW.

Alpine County Community Contributions
Local businesses, community organizations, and the County have been maintaining the Hope Valley Wildlife Area since it was acquired by DFW. The amounts involved exceed any possible revenues from the Lands Pass Program. Below is a table showing how much was contributed in services and volunteers during 2018, and how much has historically been contributed.

Hope Valley Wildlife Area
Maintenance Done by Alpine Community Organizations

Organization	Year	Maintenance	One time purchases	2018 Amount	Number of Years	Totals	Notes
Sorensen's Resort	2018	Labor		$9,125	14	$127,750	Maintenance of restrooms, parking area etc.
		Trash Services		$1,500	14	$21,000	
		Truck		$750	14	$10,500	Transporting people/supplies/trash.
		Cleaning Supplies		$500	14	$7,000	
		Toilet Paper		$400	14	$5,600	Donation by SYSCO.
Friends of Hope Valley*	2018	Fence repair, barb wire removal, clearing path to fishing pier		$3,052	21	$64,084	
		Planting 1,000 willows		$5,000	21	$105,000	
		Maintain public access paths and fishing piers		$509	21	$10,681	
		Bioengineering		$3,815	18	$68,661	Designed three projects to minimize erosion.
		Supply "doggie bags"		$200	21	$4,200	
		Fishing line disposal tubes	$300	$509	4	$2,334	
		Sign maintenance	$4,000	$509	10	$9,086	
Alpine County	2018	SaniHut pumping		$640	14	$8,960	Sewage disposal.
Alpine Watershed Group	2019 - 2024	Hope Valley Restoration & Aquatic Habitat Enhancement Project – Planning					
		Implementation/ Monitoring					
						$118,550	See text below.
						$340,000	See text below.
			Totals	**$26,509**		**$903,406**	
		* Volunteer Rate: $25.43/hour					

The Alpine Watershed Group (AWG) could not provide detailed spending records and volunteer hours in time for this letter. However their contribution has been substantial. Since 2001, AWG has been working to

preserve and enhance Hope Valley with inspiring stewardship by community members and visitors. Volunteers have consistently collected data on water temperature, air temperature, dissolved oxygen, conductivity, pH, and turbidity since 2004. Since 2014, AWG staff has coordinated the Hope Valley Meadow Stewards Program, through which volunteers have contributed over 800 hours collecting water quality and other river monitoring data, in addition to participating in stream bank restoration projects and outreach to schools and the general public. AWG staff also leads annual Creek Day workdays in the Hope Valley Wildlife Area and assists with Snapshot Day, an annual event engaging students, parents, and educators in collecting riparian habitat and water quality data to increase understanding of watershed functions.

Going forward the AWG is currently the lead entity on the Hope Valley Restoration and Aquatic Habitat Enhancement Project, which will stabilize approximately 450 feet of eroding banks at two sites in the Hope Valley Wildlife Area. The project's planning phase has been funded by the State Water Resources Control Board ($118,550); implementation funding has been procured from the Central Valley Regional Water Quality Control Board ($340,000) and will include site monitoring through 2024.

In a larger community such contributions to the maintenance of a Wildlife Area may by routine, but for a community of approximately 1,140 people it is an extraordinary investment.

Conclusion

In summary, DFW has untapped funds for the maintenance of the Hope Valley Wildlife Area that likely will exceed over 50 years of projected revenue from the Lands Pass Program here. In addition, the very organizations that are making major contributions to the maintenance of Hope Valley, along with the Washoe Tribe of Nevada and California, are the ones that strongly support Alpine County's petition to exempt the Hope Valley Wildlife Area from the Lands Pass Program. Revenues from the Lands Pass Program will not be able to sustain the upkeep of the Wildlife Area should these organizations lose heart.

Again, we greatly appreciate your time and attention to this important matter for our community. We believe the hard work and generosity of our community members and organizations provide the necessary justification for F&G and DFW to meet the Legislative obligation to obtain funds from non-consuming visitors, and that this can be done without imposing the Lands Pass Program on the Hope Valley Wildlife Area. We look forward to meeting with you again to discuss our proposed solutions and work together on a pathway forward.

Sincerely,

David Griffith
Chair, Board of Supervisors
Alpine County

Cc: Rural County Representatives of California
The Honorable Brian Dahle
The Honorable Frank Bigelow
Ari Cornman, California Fish and Game Commission
California State Association of Counties
Washoe Tribe of Nevada & California
Friends of Hope Valley
Sorensen's Resort

California Fish and Game Commission
1416 Ninth Street
Suite 1320
Sacramento, CA 95814

Subject: Negative Aspects of Transfers and Other Water Subsidies

Mister Chairman, Commission Members and Commission and Department Staffs

I previously told you that there are no magic bullets which will provide a solution to California's water shortage. The book, "Let There Be Water ", does show that Israel has come up with magic pellets to make up a magic shot shell , which has been loaded into California state policy. The attached book pages enumerate a dozen and a half factors which successfully comprise Israel's water policy. California factors which could be added include the following:

- Xeriscape
- Brackish water tidal intrusion at the Delta
- Dam retrofit to lessen need for a flood cushion, increasing reservoir capacity
- Watershed rehabilitation which would also benefit habitat and lessen megafire occurrence
- Gray water use
- Weed management reducing an evapo-transporation rate of millions of acre feet

Of all the various methods of water acquisition and retention the book notes as most important the elimination of subsidies. Having been on Cal-Fed's Watershed Work Group, I can attest that interminable meetings will change nothing if subsidies eliminate the perceived need or even the desire to change. Note the following as the water meanders down the aqueduct:

- At Patterson, in Stanislaus County, just after the initiation of pumping at Tracy, Kern County sells water declared surplus, yes surplus, even perennially surplus, to Western Hills development at a very tidy profit.
- Proceeding south, Merced County had to enact an ordinance banning local "Water Mining for export" via the aqueduct, which has assured water for the refuge complex in the Grassland area.
- Further south, Fresno State Pulitzer winning classics professor and Hoover Institute fellow, Victor Davis Hansen has decried the inanity of moving water from the Valley's fertile east side to the desert and clay of the west side. Seems reminiscent of the Athens- Sparta dustup to me.
- Los Angeles Metropolitan 's water entitlement is borrowed for use at the Westlands in Fresno County to be later paid back from water pumped from the Kern Water Bank, the City of Bakersfield, and water mined from Kern and Tulare Counties.
- The aqueduct's flowing through Lost Hills should preclude high pumping charges, yet local residential rates are among Kern Counties highest as they subsidize their employers' mile long plant's water cost. This plant is tax free, as are also the owner's other projects such as industrial and warehouse parks. These are local subsidies, not part of a State or Federal reimbursed Enterprise Zone. The City of Bakersfield just passed a sales tax for police funding; the Sheriff is moaning over his lack of funds and personnel.

- Speaking of Taxes, most of the costs for Kern County aqueduct water is secretly borne by the property taxpayer through the Zone of Benefit #7 assessment, which of course everybody knows pays for Improvement District #4, which does not have a contract with the Kern County Water Agency, but pays as presented.
- The above has proven so neat that Bakersfield unknowingly pays it again through Zone of Benefit #17
- #19 too
- As water mined for export does occur along the Federal Central Valley Project Friant Kern Canal on its way to the Kern Water Bank and often points south while dewatering the San Joaquin River, a result has been subsidence of the canal; such damages have had repair funds sought from State bond funding.
- On its export journey, the Friant Kern water recently bypassed three KCWA member districts on its way to the Kern Water Bank (KWB) west of Bakersfield. The Cross Valley Canal which originally took water from the aqueduct to east valley ag, now flows from the Friant-Kern area to the aqueduct. Sometimes concurrently. Especially sad is the major corporation benefiting from the subsidies, with size, resources, and competent staff is incentivized to access other's entitlements rather than increase the water supply.
- Another interesting subsidy occurs at the Water Bank, This State built facility , with one and a half million acre feet, was acquired by the owner of the Delano and Lost Hills plants using the Water Agency as a straw man. It now sells the development rights back to the State if it needs mitigation for a project as required by the Department of Fish and Wildlife.
- Pasture lands next to the Kern Refuge have been converted to orchards, which combined with its own sections of tamarisk (the Mideast tree that swallows up to 22 gallons a day) negatively impacts the assured refuge supply provided in the Central Valley Project Improvement Act.
- Looking into the future, if these Kern districts be successful in their attempt to acquire the Sites pump up reservoir in Colusa County, its water can be combined with the current Yuba acquisition to meet the ten thousand acre feet annual payment necessary to obtain the Kern River.

So it would seem the Department is both actively and passively, primarily and secondarily approving water subsidies. These subsidies may be at legal risk for not only environmental reasons, but also reasons relating to Environmental Justice and Proposition 218 noncompliance.

The Water Fix is like a heroin fix; it does no real good for the user. It is a symptom of the subsidy addicted. This magic bullet is to eventually transfer 4.2 million acre feet from upstream of the Delta to but replace water lost to salt water intrusion and sea rise. It does not increase the State's water supply and ag land will thus be fallowed to meet increased urban demand. I agree with the conclusion of "Let There Be Water" that the worse impacts of water subsidies are upon those receiving them.

Sincerely,

Dennis Fox

goods or services reflects its real cost with profit added. Buyer and seller both benefit. Water is the international exception to this basic principle of economics. Around the world, subsidies are the norm and nearly no one pays the real cost for what they use, especially not for the water needed to grow the food they eat. In Israel, those who use the water cover the full cost, with not a penny of government subsidy.

"The real cost of water," says Gilad Fernandes, an economist and senior official at the Israel Water Authority, "includes the development of the water resource, the infrastructure that has to be built to transport it, the testing and treatment of the water so that it is safe to drink, the pumping of it to the home so that it is always available, and the removal and treatment of sewage so there is no danger to rivers or aquifers." Although a few other countries also use real-cost pricing, in much of the world, it is common for consumers to pay little more than the pumping cost to their homes or a flat monthly fee, if even that.[4]

The most important reason for setting water and sewage fees at their real price is to let market forces work. Real pricing encourages consumers to use all of the water they need, but not more. Israel has shown real pricing to be the most effective conservation tool of all.

With market forces at work in Israel, farmers, who are the largest users of water everywhere, make decisions about which crops to grow by taking account of the real cost of growing them. To avoid unnecessary expense and waste, farmers are incentivized to use the best available technology to save water. As the market for water-saving ideas developed in Israel in response to the cost of water to all users, more entrepreneurs began directing their capital and ideas at developing ways to reduce water use even more. A virtuous circle of saving water and technological innovation was born that would grow far larger if water was priced at its real cost everywhere.

For consumers familiar with hyper-expensive bottled water, full pricing of freshwater may sound like a large burden and give reason to fear having to pay for their household water at those stratospheric levels. In

people imagine. But even at very low prices, real pricing has a deep and lasting effect on water consumption.

Israel had long subsidized water. In recent years, it abandoned doing so in favor of full pricing. Yet, for most homes, prices come out to less than a penny a gallon, or less than twenty-five cents for an ordinary shower. For very heavy household users, the price rises to about a penny-and-a-half per gallon, a pricing mechanism which keeps prices lower for light users of water. Despite this very small cost, by ending across-the-board subsidies, Israel transformed the country's demand for water. Usage in Israel dropped by nearly twenty percent.[5]

Israeli officials explaining the pricing system for water often contrast it with sunshine, something properly seen as free and endless. Full pricing for water helps to transform it from a free good that can be used without any restraint to a commodity with limits.

Use Water to Unify the Country

There aren't many benefits to Israel's small size, but in water management, it has been a blessing. Water has been moved to where it is needed by Mekorot, the country's national water utility since before the state was created. "Competition can lower costs," says Ronen Wolfman, now one of the heads of the China-Israel water company Hutchison Water and a supporter of business competition generally, "but multiple utilities would have led to duplication and either reduced service or higher costs. Instead, Mekorot can operate in the public's interest everywhere."[6]

Israel's water is blended from many sources and no one receives preferential treatment in water quality or access to more quantity. Everyone prepared to pay gets as much water as they want. Poor people have their water paid for by the same social welfare agencies that help the indigent with rent, food, and medical expenses—but someone pays for every drop of water.

not enjoy water restrictions or flow reducers on showers, but they understand why they are needed.

A positive effect of Israel's water-respecting culture is that it creates a partnership between government and the governed. When periodic droughts strike, the public understands what is expected of them. Compliance with water-reduction efforts is widely honored.

This ongoing conservation training serves the country's water interests in more than just times of water shortages. The we're-all-in-it-together mind-set helps to unlock citizen activism in finding new ways to save water and to not waste it.

Water in Israel is in the domain of the government. But water innovation has become the domain of any Israeli person, company, or organization willing to innovate in a market always eager for new thinking. This approach deepened the sense of partnership on water between government and citizen.

All of the Above

Consider what Israel does in pursuit of clean, safe, available-anytime water:

- Pumps and purifies natural water from its aquifers, wells, rivers, and the Sea of Galilee.
- Desalinates seawater.
- Drills deep wells to get brackish water.
- Develops seeds that thrive on salty water.
- Treats nearly all of its sewage to a high level of purity and reuses it on crops.
- Captures and reuses rainwater.
- Discourages landscaping of parks or homes that consume fresh-

- Seeds rain clouds to enhance rainfall.
- Demands all appliances (especially toilets) be hyper water efficient.
- Replaces infrastructure before leaks begin and promptly fixes leaks when they appear.
- Educates schoolchildren as to the value of water conservation.
- Prices water to encourage efficiency.
- Gives financial incentives for technologies that save water.
- Experiments with ideas to reduce evaporation.
- Transformed its agriculture to grow water-efficient crops.
- Uses drip irrigation for most of its agriculture.

What makes this list so extraordinary isn't just its depth and comprehensiveness. Rather it is that it represents the Israeli conviction that there is no single answer to Israel's water worries. Obviously, some techniques produce, or save, more water than others. But even with the easy surplus that desalination has brought, Israel's water professionals have effectively pursued an "All of the Above" approach that consciously integrates all possible sources of water and all possible technologies for conservation.

"Intentionally building a national system with redundancy and overlapping supplies of water," says Shimon Tal, a recent head of Israel's Water Commission, "is expensive and requires expertise in many areas. It means our bureaucracy must be larger than a more narrowly focused approach would be. On the other hand, it is also liberating because we know that Israel will have high-quality water anytime people want it, that our economy and agriculture can grow, that we can welcome new immigrants and millions of tourists, and that we mostly don't need to share the worries about shortages of water that people all over the world and certainly all over our region have. Any one part of our program can go down—a desalination plant to a war or an aquifer to drought—and no one will have their water shut off."[10]

CA
15) Proposed correction to grade crossing signal installation Agreement 226-2019 Exhibit C with BNSF Railway Company for the Boron Avenue pedestrian crossing, to include signal equipment costs in the amount of $75,525, for a new total amount not to exceed $118,691 (Fiscal Impact: $75,525; Road Fund; Budgeted; Discretionary) (S.D. #2) -
APPROVE

CA
16) Proposed retroactive License Agreement, containing non-standard terms and conditions, with the BNSF Railway providing Right-of-Way access on and across railroad property and crossing for the Boron and Desert Lakes Pedestrian Path Improvement Project, Boron, in an amount not to exceed $5,157.63, effective June 14, 2019; this action supersedes Agreement 180-2019 approved on April 9, 2019 (Fiscal Impact: $5,157.63; Road Fund; Budgeted; Discretionary) (S.D. #2) -
APPROVE; AUTHORIZE CHAIRMAN TO SIGN

CA
17) Proposed Easement Deed and Right-of-Way Contract with The Dorothy J. Bitters Revocable Living Trust, dated June 25, 2009, providing 20 square feet of their property for the Beale Avenue and River Boulevard Pedestrian Path Improvement Project, in the amount of $500 (Fiscal Impact: $500; Road Fund; Budgeted; Discretionary) (S.D. #5) -
APPROVE; ACCEPT DEED AND AUTHORIZE CHAIRMAN TO SIGN; DIRECT CLERK OF THE BOARD TO RECORD; AUTHORIZE AUDITOR-CONTROLLER TO PAY

CA
18) Proposed Easement Deed and Right-of-Way Contract with Miguel Carvajal Tapia providing 750 square feet of his property for the Fairfax Road Traffic Signal Project, in the amount of $7,500 (Fiscal Impact: $7,500; Road Fund; Budgeted; Discretionary) (S.D. #5) -
APPROVE; ACCEPT DEED AND AUTHORIZE CHAIRMAN TO SIGN; DIRECT CLERK OF THE BOARD TO RECORD; AUTHORIZE AUDITOR-CONTROLLER TO PAY

CA
19) Request for release of faithful performance security (bond) for street, water, and sewer improvements one year guarantee period, Tract 6380, Rosamond, Princeton Developments, L.P. (Fiscal Impact: None) (S.D. #2) -
RELEASE FAITHFUL PERFORMANCE BOND NO. 2220370, IN THE AMOUNT OF $45,761, ISSUED BY INSURANCE COMPANY OF THE WEST

CA
20) Proposed Resolution authorizing the Director of Public Works to sign and submit application for grant funds for the California Climate Investments Urban Greening Program (Fiscal Impact: None) (S.D. #1) -
APPROVE; ADOPT RESOLUTION

CA
21) Resolution extending County Service Area No. 71 Zones of Benefit No. 3, 5, 7, 8, and 10 to include Tract Map 7289 and levying assessments and future rate adjustment formula for same, west Bakersfield (Fiscal Impact: $7,208; CSAs; Budgeted; Mandated) (S.D. #1) -
MAKE FINDING THAT NO FURTHER CEQA REVIEW IS REQUIRED PURSUANT TO EXEMPTIONS FOUND IN PUBLIC RESOURCES CODE SECTION 21080(b)(8) AND CEQA GUIDELINES SECTIONS 15061(b)(3) AND 15273; ADOPT RESOLUTION EXTENDING ZONES OF BENEFIT NO. 3, 5, 7, 8, AND 10 WITHIN COUNTY SERVICE AREA No. 71, TRACT MAP 7289, AND AUTHORIZING LEVYING OF ASSESSMENTS AND FUTURE RATE ADJUSTMENT FORMULA FOR TRACT MAP 7289

Board of Supervisors
County of Kern
1135 Truxton Ave]
Bakersfield, CA 93301

Subject: Subsidy Aspects of Consent Agenda item 21

Mr. Chairman. Board Members and Staff

The part of the consent Item I wish to focus on is City inclusion into Zone of Benefit #7; as of course nobody knows, this pays into Improvement District #4 which has no contract with the Water Agency, but subsidizes other's water purchases from the State. Two years ago three water districts did not get water as it flowed past to an out of County company. This makes it extra hard to peddle the tax as a local benefit to City residents.

Further, this Zone pays for water taken from the Delta and Sacramento River. It takes both irrigation water and " push water", needed to fight salt water intrusion, from the northern farmers, who focus on water and soil for commodity production without our local added focus of farming the taxpayer.

Added to the Delta farmer's problem s are those of small businesses such as charter boat owners, bait stores, marinas motels and such ventures of a touristy nature. While this item can be seen as a Prop 218, EJ, and environmental issue, I would note that since Mark Arax's book "The Dreampt Land " came out in May, Kern has had a non-heard Budget hearing at the Water Agency, the Library won't shelve its copies of the book , as well as this item , which combine to give added credence to any ethical conclusions reached in the book.

Sincerely,

Dennis Fox

[redacted]

[redacted]

PS Due to time limitations, I'll give the Clerk a cc of my comments on this topic to the State for your perusal and any possible comments on my part later.

Re: supporting materials for the Petition for Regulatory Changes for Grunion

On Thu, Jul 25, 2019 at 3:57 PM Karen Martin <karen.martin@pepperdine.edu> wrote:
Hi Elizabeth,

I am sending you materials that I hope can be provided to the Fish and Game Commission for their August meeting.

These include:
1) short Powerpoint presentation, similar to the one I sent earlier but including title and closing slides, as both ppt and pdf formats.
2) four letters of support for the Petition, from Heal The Bay, SWIA, Grunion Greeters, and Santa Barbara ChannelKeepers.
3) signatures for an online petition in support of the regulatory changes, signed by 271 people including 44 scientists, with 61 comments.

I am still planning to make a brief presentation to the Commission at the August meeting, with the attached slides.

I previously sent you a link for the scientific paper in ICES Journal of Marine Science, and of course the Petition for Regulatory Change itself, that should also be included.

Please let me know if you have any questions about any of this. Thanks for all your helpful advice. I'm looking forward to this opportunity to meet with the Commission.

All the best,
Karen

Karen Martin, PhD
Distinguished Professor of Biology
Frank R. Seaver Chair in Natural Science
Pepperdine University
Malibu, CA 90263-4321
Office: 310/506-4808

www.Grunion.org
www.BeachEcologyCoalition.org

Tracking Populations of California Grunion: Petition for Change

Dr. K. L. M. Martin,
Pepperdine University,

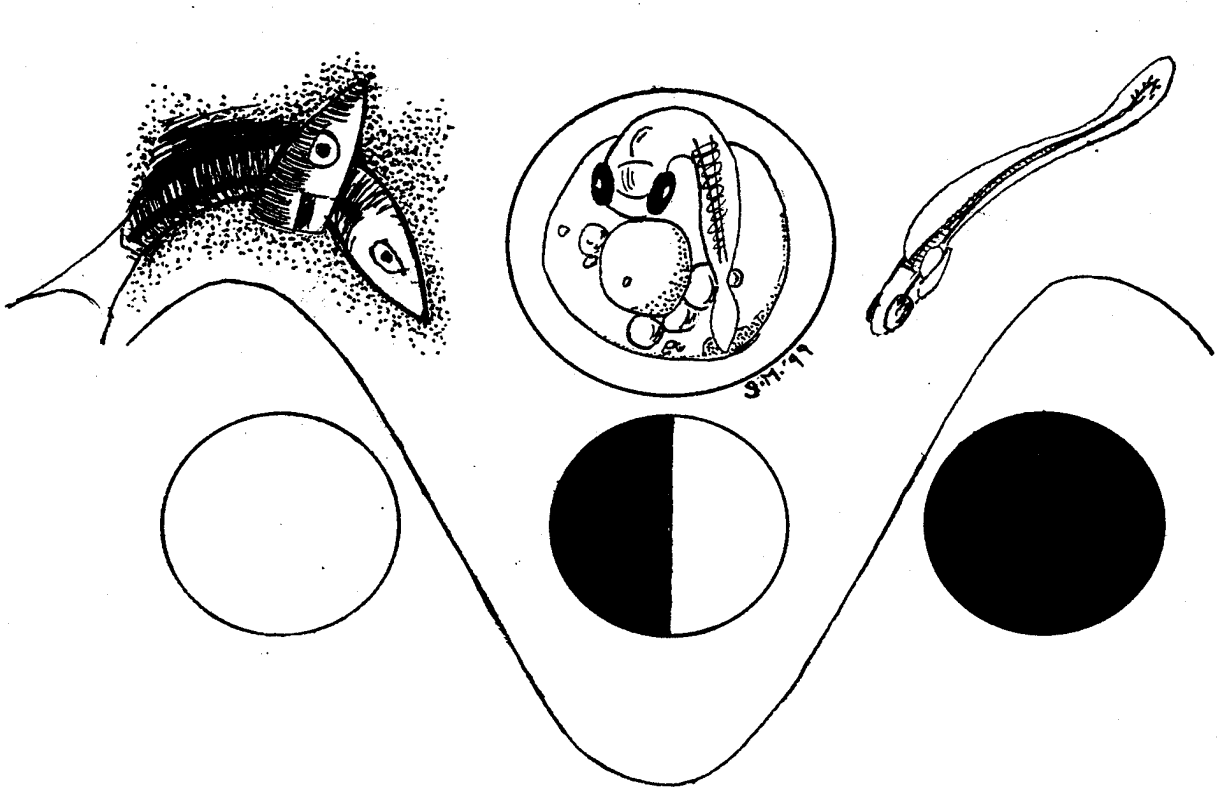
With citizen science data from the
Grunion Greeters

Photo: Carl Manaster, Grunion.org

CA Grunion life cycle

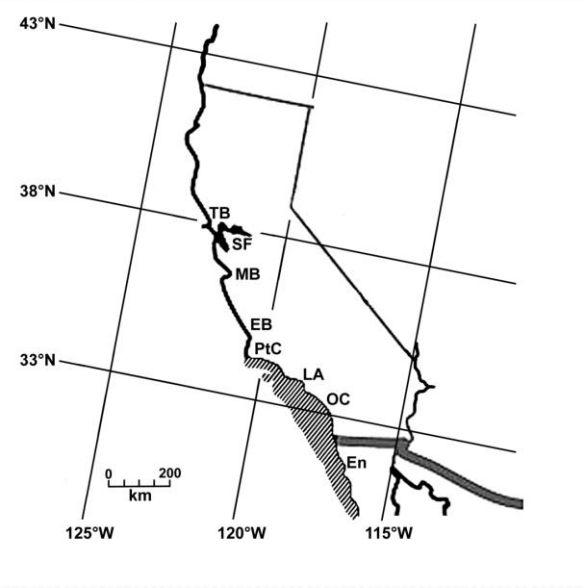
Leuresthes tenuis

- Endemic species, only in California and Baja California, Mexico.
- Spawn on sandy beaches during high tides, after full or new moons.
- Eggs incubate out of water under sand until the next semilunar tides.
- Larvae hatch with rising tides.



Art by G. Martin

CA Grunion: CDFW Managed Species



This indigenous endemic marine fish occurs mainly off the coast of three counties: San Diego, Orange, and Los Angeles.

Recently the habitat expanded to a few locations north of Pt. Conception.

CA Grunion have never been abundant.

CA Grunion are vulnerable to recreational overharvest and to other human activities on the shore.

Since 1927, spawning CA Grunion are protected by:

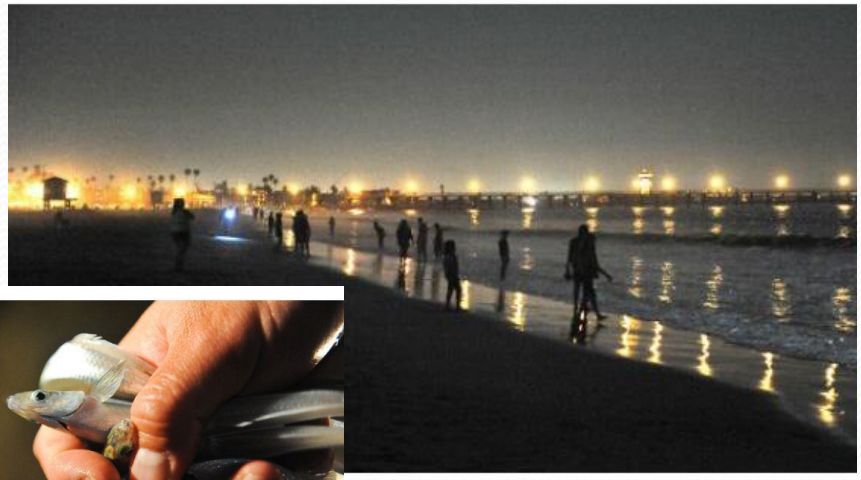


Photo by J. Flannery, M. Reiss, Grunion.org

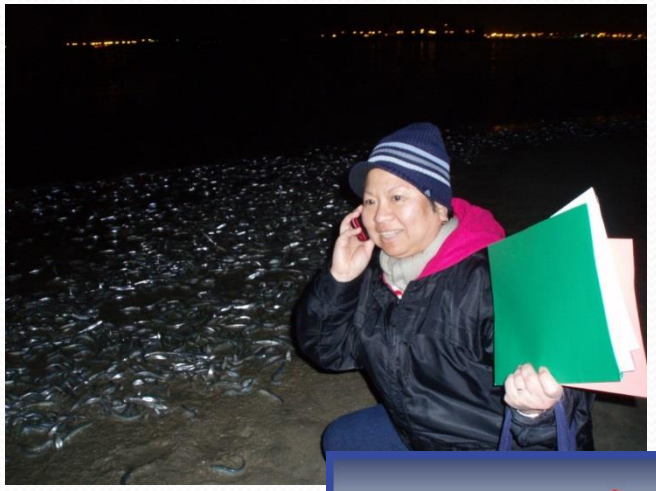
- Closed season (no take) April and May, originally April - June.
- Gear restrictions (none allowed).
- License requirement for age 16 and above.
- HOWEVER--
- No bag limit.
- No reporting of catch.

The challenges of assessing the stock of *L. tenuis* are many.

- Traditional fishery sampling methods don't work.
- CA Grunion are observed only during spawning runs.
  - Runs vary widely over space and time.
  - All runs occur around the same time of night.
  - Runs occur late at night on dark beaches.

Solution: Grunion Greeters!

Citizen scientists attend training workshops and monitor specific beaches during nights when grunion runs are forecast.

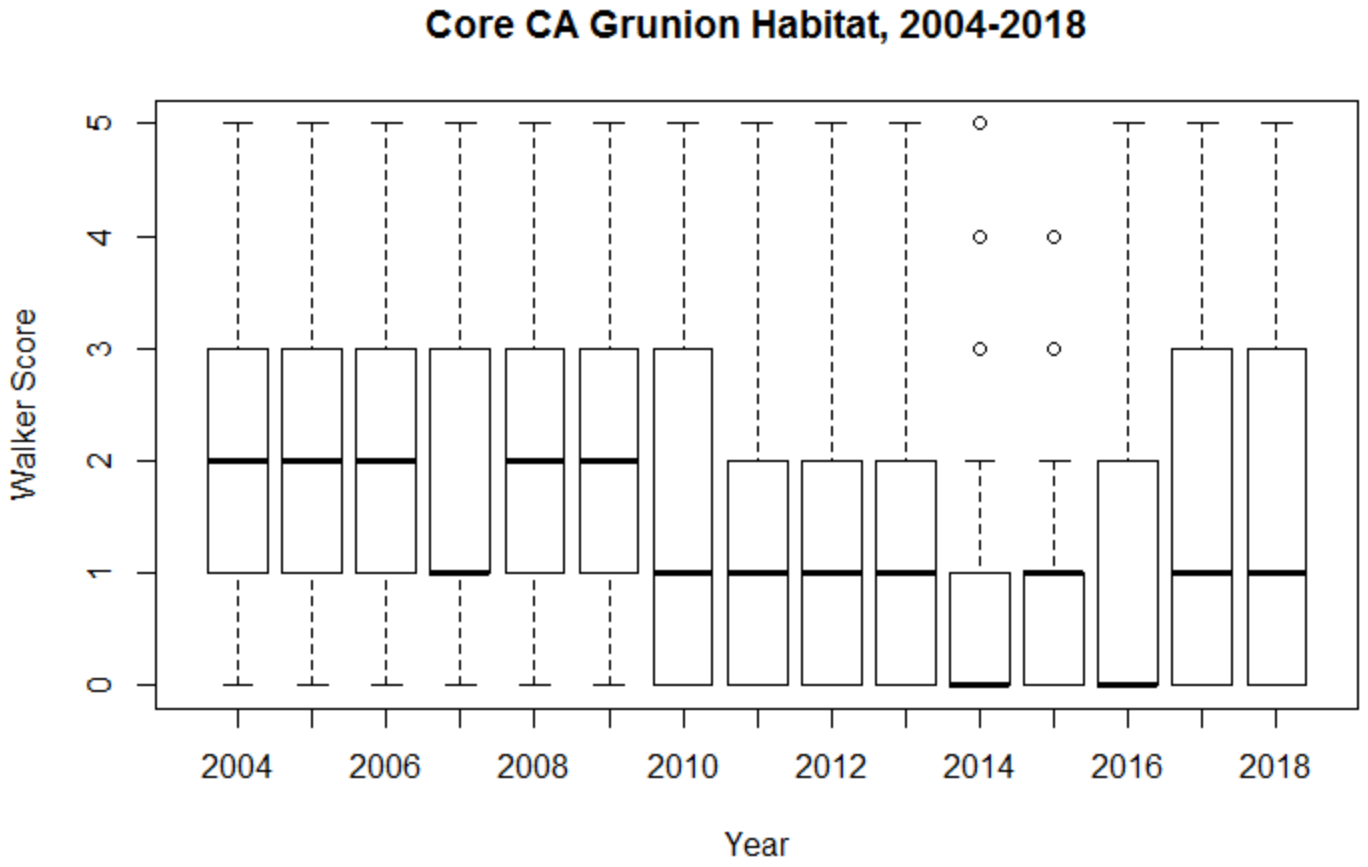


Walker Scale for Grunion Runs

used by Grunion Greeters

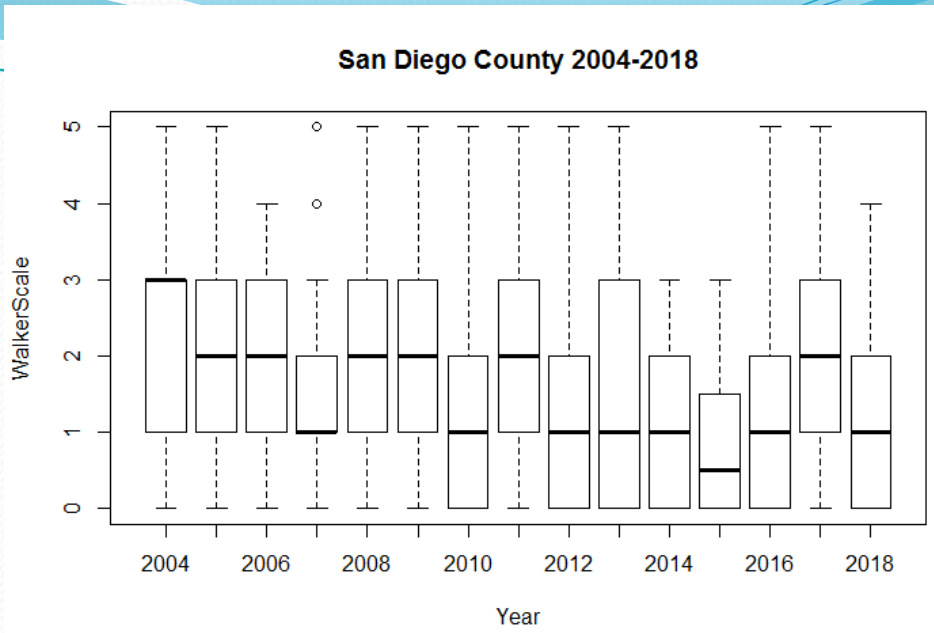
- W-0: No fish show up, or just a few, no spawning.
- W-1: More than 10, and up to 100 fish show up, little or no spawning behavior
- W-2: 100-500 fish; scattered across the beach or in one area, spawning activity
- W-3: several hundred to 1000 fish spawning in one or several locations along the beach
- W-4: thousands of fish spawning across a wide area of the beach
- W-5: fish covering the beach across a wide area, peak run lasts an hour or more

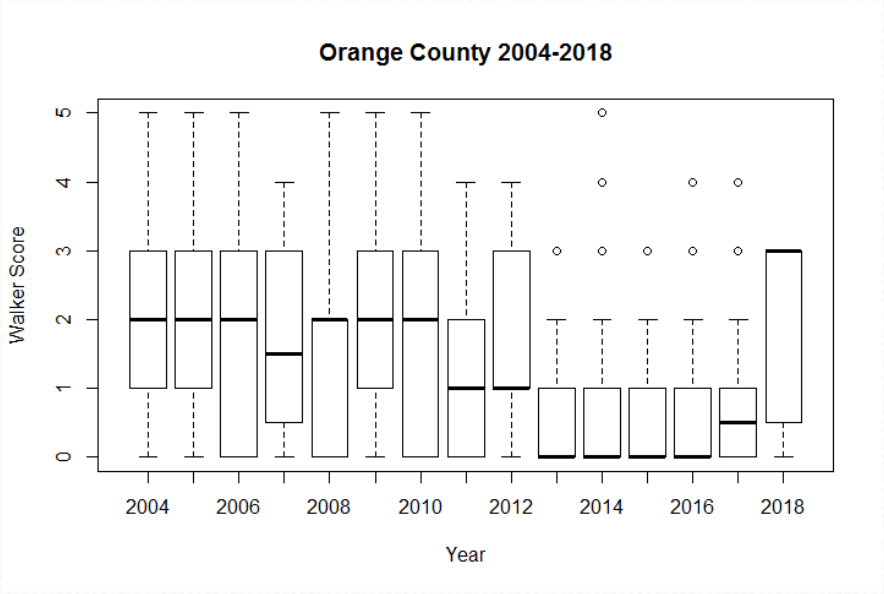
Reports indicate runs have decreased over time in the core species habitat.

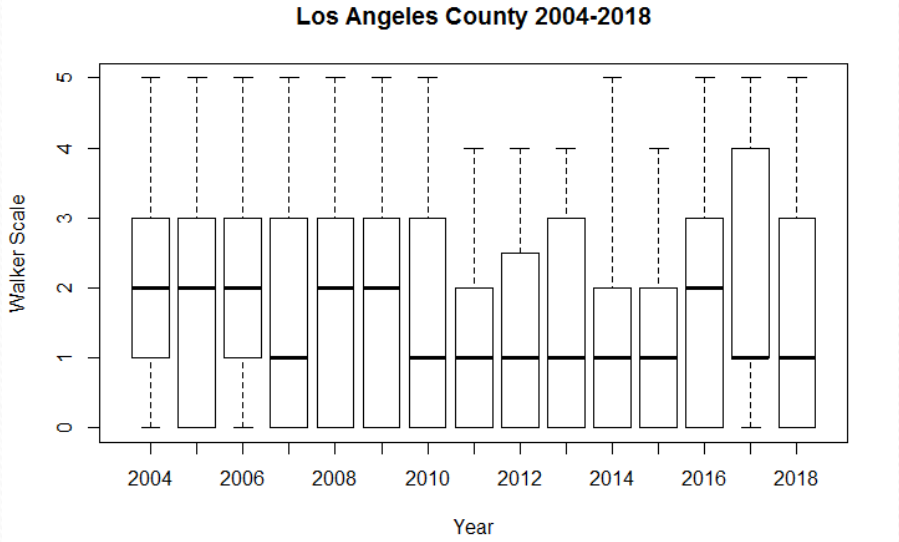


Median run has declined over the past 15 years in San Diego, Orange, and LA counties.

Decline in runs is consistent across each county in the core habitat.

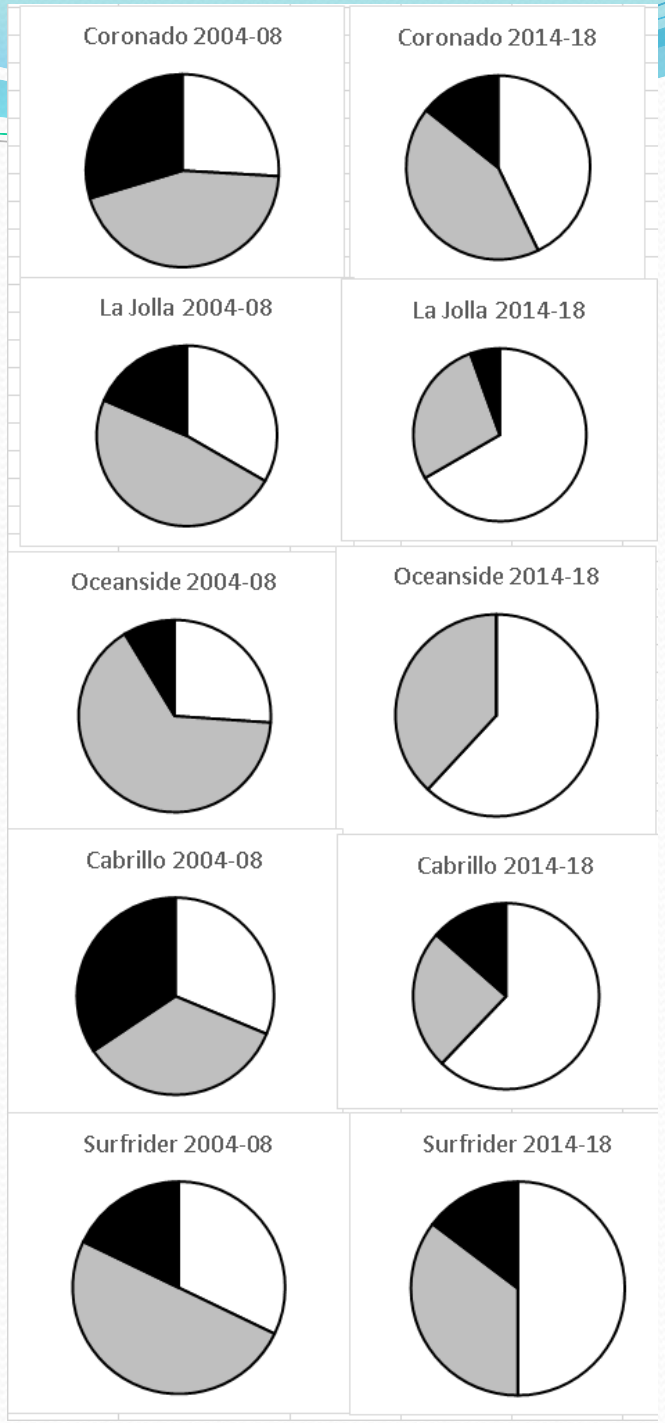




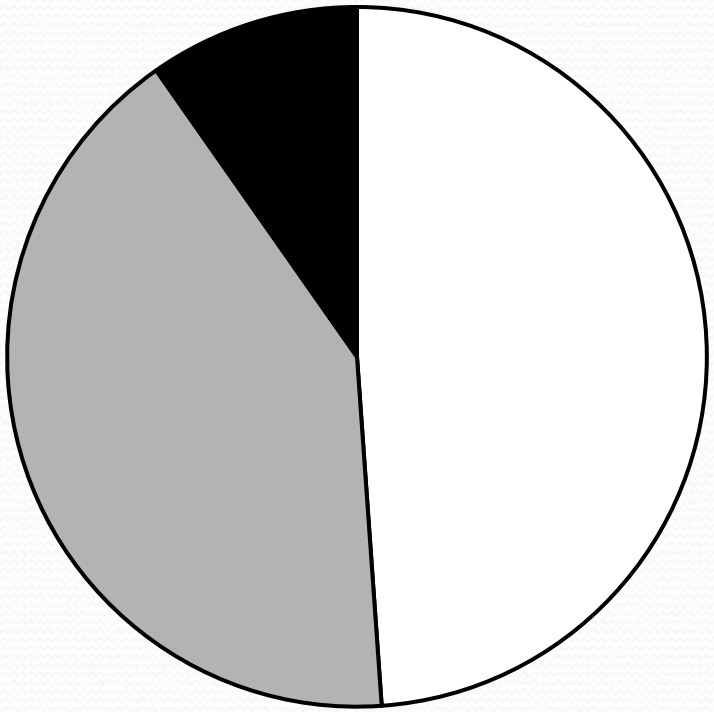


Decline in runs is consistent even at beaches known to hold large runs

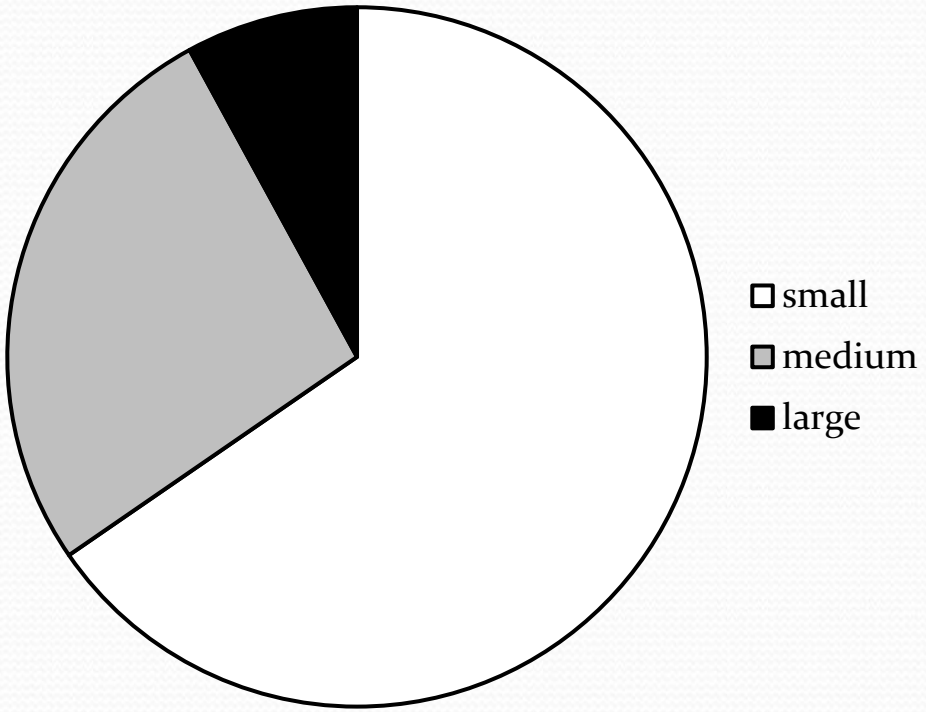
White: small, W0-1
Grey: medium, W2-3
Black: large runs, W4-5



Comparison across decades: significantly more small runs, fewer medium and large runs, suggests lower reproductive output.



2004-08



2014-18

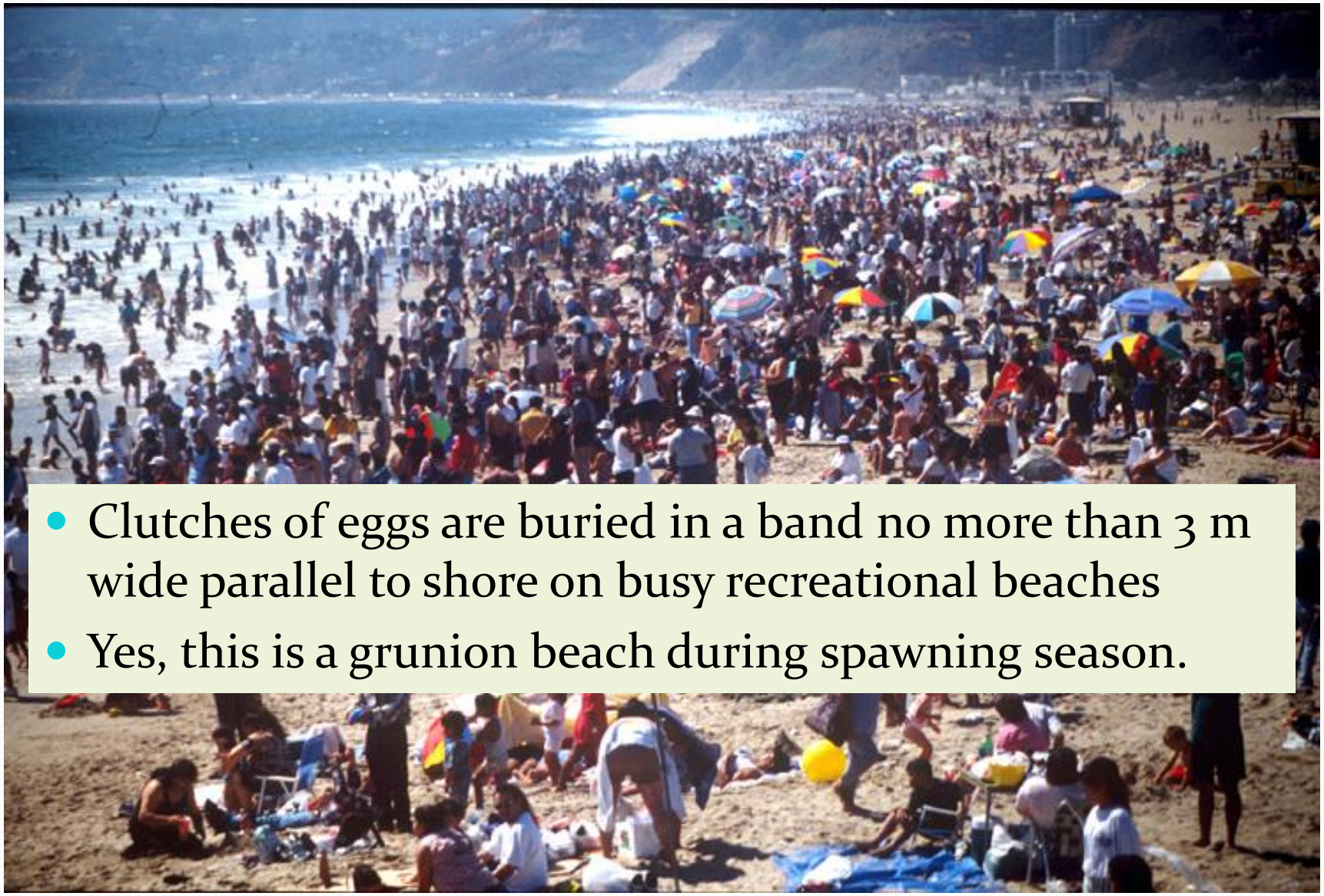
Poaching (out of season, or using gear in season, or without a fishing license)

In general: poaching in about 20% of reports in Closed Season

Hunting is reported in 93% of observations in Open Season

Regulations are rarely enforced late at night when runs occur.

Grunion spawning zone is small



- Clutches of eggs are buried in a band no more than 3 m wide parallel to shore on busy recreational beaches
- Yes, this is a grunion beach during spawning season.

Northern Grunion are smaller, spawn later, and produce fewer eggs →more vulnerable

Malibu grunion (L)
northern grunion (R)

What actions are needed?

- We recommend changes for the recreational fishery
  - Amend 27.60(b); no bag limit, to 27.60(a), limit 10;
  - Section 28.00, seasonal closure, south of Pt. Conception restore June closure, 7/1 – 3/31.
  - Section 28.00 north of Pt. Conception: later closure, may be taken 9/1 – 3/31.

Photo: Bill Hootkins, 2004

Grunion Greeters THANK YOU FOR YOUR HELP!!!

We encourage
"Observe and Conserve,"
or "Catch and Release"
so that future generations will be
able to marvel at this unique,
charismatic species.

See www.Grunion.org for more

Heal the Bay

1444 9th Street
Santa Monica, CA 90401

ph. 310-451-1500
fax 310-496-1902

info@healthebay.org
www.healthebay.org

July 24th, 2019

California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

RE: Petition for Regulation Change, California Grunion – SUPPORT

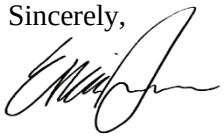
Dear California Fish and Game Commissioners,

On behalf of Heal the Bay, a non-profit environmental organization with 15,000 members and over 30 years of experience dedicated to making the coastal waters and watersheds of greater Los Angeles safe, healthy, and clean, I am writing to express support for the Petition to the California Fish and Game Commission for Regulation Change of the California Grunion recreational fishery, submitted by Dr. Karen Martin in June of 2019. As an advocate for sustainable fisheries management and the protection of California's unique and vulnerable marine species, Heal the Bay acknowledges the evidence presented in this petition as reasonably sufficient to warrant a regulatory change that will increase protection for the California Grunion.

California Grunion, *Leuresthes tenuis*, an indigenous endemic marine fish found along the Pacific coast of California and Baja California, is an iconic species that exhibits remarkable midnight spawning runs onto our state's sandy beaches. The display of Grunion runs elicits great interest from spectators and recreational anglers alike. In the last decade, however, evidence from community science monitoring shows statistically significant declines in Grunion run size across much of the species' core habitat[1]. This data, along with anecdotal evidence of blatant mistreatment of the species and disregard for current seasonal closures and gear restrictions by recreational anglers, shows an obvious need for increased protection. As an aggregate spawning fish, California Grunion face increased extinction risk and therefore, similarly to Kelp Bass, are in need of increased protection from unchecked recreational take.

Heal the Bay supports the proposed regulatory change to increase the closed season for California Grunion to include the month of June south of Point Conception and to include the months of June, July and August north of Point Conception. Additionally, we support the proposed regulatory change of an imposed bag limit of 10 fish per angler per day. Scientific evidence shows that increased protection is needed for this iconic species, and therefore Heal the Bay supports this petition for regulatory change. Should you require any additional information, please feel free to contact me at eparker@healthebay.org or at 310.451.1500 x156. Thank you.

Sincerely,



Emily Parker
Coastal and Marine Scientist
Heal the Bay

[1] Martin, K. L., Pierce, E. A., Quach, V. V., & Studer, M. (2019). Population trends of beach-spawning California grunion Leuresthes tenuis monitored by citizen scientists. ICES Journal of Marine Science. doi:10.1093/icesjms/fsz086

SWIA

July 25, 2019

California Fish & Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Dear Commissioners;

Southwest Wetlands Interpretive Association (SWIA) is a 501(c)(3) non-profit organization, founded in 1979, and dedicated to the education in and acquisition, preservation and restoration of wetlands.

As President of SWIA, I want to express support for the petition recommending a change in regulations for the recreational fishery on California grunion. We support the change to return the closed season back it to its original time of April - June, and a bag limit of ten in place of the current "no limit" on catch. Additionally, we support a longer closed season north of Pt. Conception because of their later start.

As a partner with the Tijuana River National Estuarine Research Reserve, SWIA has been pleased to support the Grunion Greeter program over the years. The Reserve has provided use of the Visitor Center to host the Grunion Greeter workshops. As a result, numerous community members have become Citizen Scientists and continue to have a keen interest in observing these silver species on our local beaches, educating other observers at the same time.

(On a side note, our Project Manager, Mayda Winter, is a great supporter of the Grunion Greeter program and often comments that on her daily walks on the Imperial Beach Pier, when people see her Grunion Greeter jacket, they stop her and ask questions about the program and the runs.)

In conclusion, with these changes in place, we will increase the chances that future generations will be able to witness this unique surfing fish and their spectacular midnight runs.

Sincerely,

Mike McCoy

Mike McCoy
President

Southwest Wetlands Interpretive Association ▪ P.O. Box 575 ▪ Imperial Beach, CA 91933
tel. (619) 575-0550 ▪ fax (619) 424-6420 ▪ www.swia4earth.org

Grunion Greeters

July 24, 2019

TO: California Fish and Game Commission

RE: Proposed recommendations for longer seasonal closure and bag limit for grunion

I have worked with hundreds and hundreds of volunteer citizen scientists, the “Grunion Greeters”, who monitor local California beaches and collect observations during grunion runs since the project’s inception in 2002. Initially our objective was very narrow as we launched a study per the request of the City of San Diego to determine whether beach grooming practices harmed grunion eggs. Since then the scope of the program has grown exponentially as we now have volunteers throughout their entire California spawning range, collecting data for a variety of purposes.

What we did not anticipate was the level of enthusiasm and commitment of these volunteers, along with community support and endless opportunities for increasing awareness about the importance of sandy beach habitats. There has been consistent interest in the grunion from the general public as well as the media. Educators take advantage of their out-of-water spawning to teach about the life cycle of fish, the food web, the importance of sandy beach ecosystems, and more. Tourists hear about the fish and head to the beach to experience a run and witness California’s original surfers. The mere mention of grunion elicits inevitable stories about the fish from anyone who grew up in California.

I’d like to share just one of my own personal experiences when I was shopping at Trader Joe’s. I had gone into pick up some Ballast Point grunion pale ale, which is a seasonal brew created by the San Diego brewery. An employee noticed me taking it from the shelf and asked if I knew when they were running. As I answered him, another shopper overhead and asked me a few questions. Not long after I found myself giving a mini-lecture to the group that had gathered. My experience was not a unique one; over the years Grunion Greeters have shared many similar experiences. Grunion are iconic to our culture in California, they are critical to the food web, they are a truly unique species and one of very few whose spawning behavior can easily be witnessed.

The human population is increasing, the sandy beach habitat is shrinking, and the grunion population is declining. Therefore, I urge you to adopt the proposed recommendations.

Respectfully,

Melissa Studer

Melissa Studer
Grunion Greeters Project Director
www.Grunion.org
619.733.0725

Santa Barbara
CHANNELKEEPER®

714 Bond Avenue
Santa Barbara, CA 93103

tel 805.563.3377

info@sbck.org
www.sbck.org

July 18, 2019

California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Re: Proposed regulations to protect California Grunion

Dear Commissioners,

I am writing on behalf of Santa Barbara Channelkeeper to express our support for proposed actions to further protect California Grunion. Santa Barbara Channelkeeper is a 501(c)3 organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds through science based advocacy, education, field work and enforcement. Channelkeeper has nearly 20 years of experience implementing citizen monitoring programs to monitor water quality and the health of local watersheds and the Santa Barbara Channel. It is with this backdrop that Channelkeeper draws serious concern in the findings of Dr. Karen Martin's monitoring and research, which indicates that the California grunion population is threatened and declining.

For many years, Channelkeeper provided volunteer coordination support for the citizen science Grunion Greeters monitoring project for the Santa Barbara region. The Grunion Greeters program is a stellar example of citizen science done-right. Through its longevity, dedicated volunteer base, geographic expanse, commitment to training and quality control, and numerous private, academic, non-profit, and agency partnerships, the Grunion Greeters program has managed to compile the most robust and complete dataset available for this species. For this reason, Channelkeeper takes Dr. Martin's conclusions, along with the findings of other researchers cited in this request for change in regulations, quite seriously.

Channelkeeper supports sustainable management of fisheries. Due to the findings presented at this point in time, and due to the fact that grunion regulations have remained unaltered for many decades, we request that the Commission favorably consider modifying regulations to increase current protections for California grunion.

Sincerely,

Ben Pitterle
Science and Policy Director
Santa Barbara Channelkeeper

This petition has collected
271 signatures
using the online tools at ipetitions.com

Printed on 2019-07-25

Protect the California Grunion

About this petition

Grunion are small fish found only in California and Baja that are known for their spectacular spawning behavior as they come completely out of the water on sandy beaches during certain spring and summer nights. However, this behavior leaves them extremely vulnerable during the months when fishing is permitted. In addition to that, their habitat is shrinking due to sea level rise and coastal development.

In 1927 the months of April, May and June were designated by the CA Department of Fish and Game (now the CA Department of Fish and Wildlife) as closed to fishing to protect the species during their speak spawning season. In 1949, the month of June was removed from closure leaving only April and May protected. Since 2002 thousands of volunteer citizen scientists, the "Grunion Greeters", reported observations from spawning nights in part to assess the health of the species. Unfortunately the data show a decline in population causing significant concern for the future of this iconic fish.

We propose increasing protection by returning to the original closure for June in southern California, and through August for beaches north of Pt. Conception because the runs occur later there. Also, currently their is no limit on how many fish are allowed to be taken, so we propose adding a "bag limit" of 10 fish.

Read more information about the species and this issue here.

www.BeachEcologyCoalition.org

Signatures

1. Name: Melissa Studer on 2019-07-06 18:23:40
Comments: Melissa Studer

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2. Name: Karen Martin on 2019-07-06 20:07:41
Comments:

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3. Name: Carl Manaster on 2019-07-06 22:58:33
Comments:

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4. Name: Mary Kennedy on 2019-07-06 23:02:17
Comments:

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5. Name: Mary Molitor on 2019-07-06 23:03:55
Comments:

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6. Name: Kevin Polacek on 2019-07-06 23:07:56
Comments: Protect unique species to our area

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7. Name: James Krulisky on 2019-07-06 23:20:50
Comments:

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8. Name: Susan Ramos on 2019-07-06 23:45:34
Comments: I have been observing grunion in the SF Bay for the past 3 years and totally agree!

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9. Name: Rachel Graham on 2019-07-06 23:47:57
Comments: Evidence suggests that increasing the length of the closed grunion will help ensure that the future of this important fish. Please extend the closed season as suggested.

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10. Name: Barbara Westrum on 2019-07-07 00:04:00
Comments: Lets save this species so that our grand children can witness their unusual behavior at night

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11. Name: joe glennon on 2019-07-07 00:09:46
Comments: Yes, save the grunion!

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12. Name: Chris Studer on 2019-07-07 00:12:04
Comments:

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13. Name: H keating on 2019-07-07 00:17:28

Comments: The new restrictions suggested are minor and yet they can make a difference for a population that can easily dwindle without this kind of protection.

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14. Name: Clark Pennelly on 2019-07-07 00:35:09
Comments:

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15. Name: Doug Martin on 2019-07-07 00:39:56
Comments:

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16. Name: Gaynell Schenck on 2019-07-07 01:11:54
Comments: I was a Grumuon Greeter for several years. It is important to save this on-shore spawning species by restricting the taking of them during their summer spawning.

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17. Name: Harmony Miller on 2019-07-07 01:14:31
Comments: I’m thankful for the opportunity to see grunions mating on the shores of Alameda not long ago. Let’s preserve this opportunity for future generations!

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18. Name: lorraine goerke on 2019-07-07 01:23:47
Comments:

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19. Name: Jacinte Jean on 2019-07-07 01:40:56
Comments:

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20. Name: Marcela Ponce on 2019-07-07 01:49:25
Comments:

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21. Name: Michelle Winternolte on 2019-07-07 01:50:55
Comments:

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22. Name: Bridget Altman on 2019-07-07 01:50:56
Comments:

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23. Name: Sandra Kirwin on 2019-07-07 01:58:53
Comments: Grunion are a National treasure and need/deserve all the protection possible.

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24. Name: Tania popov on 2019-07-07 02:07:50
Comments:

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25. Name: Ann Gunvalsen on 2019-07-07 02:32:08
Comments: Grunion are important to beach ecology. We need to protect them.

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26. Name: Barbara LaCorte on 2019-07-07 02:35:04

Comments:

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27. Name: Jessica Martin on 2019-07-07 02:35:52
Comments:

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28. Name: Wiley Davis on 2019-07-07 02:42:14
Comments:

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29. Name: Christina Beaty on 2019-07-07 02:44:06
Comments:

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30. Name: Susan Graham on 2019-07-07 04:17:14
Comments:

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31. Name: Steve Hausman on 2019-07-07 04:24:20
Comments: Please save the grunion!

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32. Name: Nina warner on 2019-07-07 04:33:10
Comments: Please protect the grunions

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33. Name: Susanna Nied on 2019-07-07 04:47:48
Comments:

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34. Name: Zbz on 2019-07-07 04:49:30
Comments:

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35. Name: Wendy Dreskin on 2019-07-07 05:13:29
Comments:

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36. Name: Christina Simokat on 2019-07-07 05:14:33
Comments: Grunion are in need of extended protection due to the impact of human activities. Do the right thing and follow the data.

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37. Name: Laura O'Neal on 2019-07-07 06:28:02
Comments: Please protect the grunions, thanks.

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38. Name: Dana williams on 2019-07-07 09:03:02
Comments: As a grunion greeter, I have noticed a decline in the number of fish.

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39. Name: Jane Howell Canseco on 2019-07-07 13:19:29
Comments: California and grunion are a unique combination which must be preserved and protected. Please keep them both safe by adding June as another non-fishing month.

40. Name: Joann Mockbee on 2019-07-07 14:51:55
Comments: I remember when the grunion covered the shore in Pacific Beach. People were actually walking on the fish.

41. Name: Karen McReynolds on 2019-07-07 16:58:53
Comments: California’s grunion are worthy of protection! It makes lots of sense to extend the protected season for another month. Please consider how important this is to these unique and precious Southern California fish.

42. Name: Soo kim on 2019-07-07 17:11:19
Comments:

43. Name: Amanda Kahn on 2019-07-07 17:56:28
Comments:

44. Name: John Roberts on 2019-07-07 18:00:32
Comments:

45. Name: Andrea Dransfield on 2019-07-07 21:18:16
Comments:

46. Name: Toni Mizerek on 2019-07-07 21:31:10
Comments:

47. Name: Mike LaRocca on 2019-07-07 21:34:51
Comments:

48. Name: William Morley on 2019-07-07 22:54:24
Comments:

49. Name: rdykstra on 2019-07-07 23:18:13
Comments: Great little fish but overfished for a long time now. Needs protection.

50. Name: Aileen Emer on 2019-07-07 23:23:09
Comments:

51. Name: Sharon Anderegg on 2019-07-07 23:37:21
Comments:

52. Name: Kyphet Rattanavilay on 2019-07-08 00:25:32
Comments:

53. Name: Lisa Baker on 2019-07-08 00:39:37
Comments:

54. Name: Anand Nene on 2019-07-08 00:42:42
Comments:

55. Name: Patricia Anne Malone on 2019-07-08 01:17:08
Comments: The grunion are a very valuable species to us residents who enjoy going out to observe and protect them. We regularly observe the other wildlife that depend on the grunion and their eggs as well. Please increase their protection!

56. Name: Erin Engstrom on 2019-07-08 02:01:36
Comments:

57. Name: Katie Williams on 2019-07-08 02:14:41
Comments:

58. Name: Janis Spracher on 2019-07-08 04:00:16
Comments:

59. Name: Patricia Johnson on 2019-07-08 04:43:34
Comments:

60. Name: Luke Mullins on 2019-07-08 05:29:18
Comments:

61. Name: Marilyn Dudley on 2019-07-08 12:06:04
Comments:

62. Name: Janet Alicea on 2019-07-08 13:21:38
Comments:

63. Name: Shaun Hawke on 2019-07-08 14:53:09
Comments:

64. Name: Maura ONeill on 2019-07-08 14:59:12
Comments:

65. Name: Suzanne Wertheim on 2019-07-08 15:31:25
Comments:

66. Name: Amy Litton on 2019-07-08 16:09:52
Comments: I have faith that the great state of California will recognize the value of grunion and take the necessary measures to afford a stronger level of greater protection for these fascinating creatures. Thank You!

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67. Name: Alex Martin on 2019-07-08 17:47:26
Comments:

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68. Name: Tina Sheie on 2019-07-08 17:50:23
Comments: You have my full support!

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69. Name: Mayda Winter on 2019-07-08 19:12:53
Comments:

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70. Name: Loni Adams on 2019-07-08 19:16:29
Comments: I believe that the petition to change the Fish and Game Code regulations for more California grunion protections such as a bag limit with more monitoring and enforcement efforts, as well as extensions of no take season is definitely appropriate at this point in time. I am a Fish and Wildlife Environmental Scientist and I work regularly on California grunion spawning and habitat monitoring as it relates to my job duties. I have also noticed a decrease in grunion spawning activities over the last 12 years.

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71. Name: Brian Loly on 2019-07-08 20:15:29
Comments:

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72. Name: Marthena Segura on 2019-07-08 21:18:07
Comments:

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73. Name: Erica Mason on 2019-07-08 22:12:05
Comments:

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74. Name: Daniela Loera on 2019-07-08 22:29:41
Comments:

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75. Name: Dennis Davidson on 2019-07-08 22:57:33
Comments: We need to keep people away from fishing for them if we wish to not have them disappear from these joyful annual runs. They are educational and entertaining!!

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76. Name: Aveanna Tomada on 2019-07-08 23:22:56
Comments: I'd love the Grunion Run to remain so I could see these fish naturally!

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77. Name: Emily Jones on 2019-07-09 07:05:52
Comments:

78. Name: Marcus Bearse on 2019-07-09 08:19:58
Comments:

79. Name: Pamela Groswald on 2019-07-09 15:12:22
Comments:

80. Name: Nicole Gee on 2019-07-09 15:33:01
Comments:

81. Name: Matthew Winter on 2019-07-09 15:43:23
Comments: A very reasonable and fair request.

82. Name: Matt Christopherson on 2019-07-09 16:29:08
Comments:

83. Name: Susan Mahan on 2019-07-09 16:56:20
Comments:

84. Name: Robert Espinoza on 2019-07-09 17:44:43
Comments:

85. Name: Giacomo Bernardi on 2019-07-09 17:45:12
Comments: Professor of Biology, University of California Santa Cruz

86. Name: Emily Ladin on 2019-07-09 17:46:26
Comments:

87. Name: Glenn Itano on 2019-07-09 17:51:25
Comments: Make Atherinids Great Again!

88. Name: Rodney Honeycutt on 2019-07-09 17:52:02
Comments:

89. Name: Lorna Jane McFarlane on 2019-07-09 17:53:15
Comments:

90. Name: Ozie Le Sage on 2019-07-09 18:15:00
Comments:

91. Name: Kayla Blincow on 2019-07-09 18:44:56
Comments:

92. Name: Kaela Farno on 2019-07-09 19:06:07
Comments:

93. Name: Connor Coscino on 2019-07-09 19:06:17
Comments:

94. Name: Cassadie Moravek on 2019-07-09 19:10:40
Comments:

95. Name: Youssef Doss on 2019-07-09 19:11:20
Comments:

96. Name: Gregor Cailliet on 2019-07-09 19:11:27
Comments: I strongly support this petition. These fishes are worth protecting.

97. Name: Natalya Gallo on 2019-07-09 19:25:40
Comments: This is a very reasonable request, especially given the observed population decline. Establishing a take-limit should be a no-brainer. Allocating additional funding for research to better understand the life history of the grunion and what affects larval survival and recruitment would also improve understanding of the health of the population.

98. Name: Sigfrido Zimmermann on 2019-07-09 19:32:12
Comments:

99. Name: Russell Dauksis on 2019-07-09 19:40:41
Comments:

100. Name: Tara Blank on 2019-07-09 19:41:02
Comments:

101. Name: Karl Kindall on 2019-07-09 19:41:55
Comments:

102. Name: Robert N Lea on 2019-07-09 19:55:21
Comments: This is a very well conceived petition. I fully support.

103. Name: JE Kubler on 2019-07-09 20:37:10
Comments:

104. Name: j a zaitlin on 2019-07-09 21:00:18

Comments:

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105. Name: Carol Ginsburg on 2019-07-09 21:03:07
Comments:

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106. Name: Michael Franklin on 2019-07-09 21:06:42
Comments:

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107. Name: Lucas Martz on 2019-07-09 21:50:20
Comments:

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108. Name: Stephani Scott on 2019-07-09 21:50:40
Comments:

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109. Name: Michael Horn on 2019-07-09 21:56:43
Comments: Excellent petition! I'm in full support.

Mike Horn

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110. Name: Lana Hameister on 2019-07-09 22:47:35
Comments:

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111. Name: Stacey Vigallon on 2019-07-09 23:28:21
Comments:

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112. Name: Shona Balfour on 2019-07-09 23:30:50
Comments:

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113. Name: Gwen Noda on 2019-07-09 23:30:51
Comments:

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114. Name: Curt warren on 2019-07-09 23:32:30
Comments:

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115. Name: Joanne Rys on 2019-07-09 23:59:27
Comments:

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116. Name: Kerry Nickols on 2019-07-10 00:07:32
Comments:

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117. Name: Elizabeth Brewer on 2019-07-10 00:22:21
Comments:

118. Name: Isabelle Kay on 2019-07-10 00:52:13
Comments: We should do everything we possibly can to protect this amazing, mysterious and unique fish

119. Name: Diana on 2019-07-10 01:14:33
Comments: Perfectly said! These iconic local creatures deserve our protection! Way to go Grunion Greeters!

120. Name: Julia Grothe on 2019-07-10 01:31:09
Comments:

121. Name: Patrice Anderson on 2019-07-10 01:39:04
Comments:

122. Name: Martha Mason on 2019-07-10 01:57:31
Comments:

123. Name: Victoria Schlegel on 2019-07-10 02:06:03
Comments:

124. Name: Jennifer Harr on 2019-07-10 02:42:30
Comments:

125. Name: Emily Pierce on 2019-07-10 03:08:24
Comments: Help protect the grunion! I have seen first hand what a group of people can do. Worse yet, game wardens never check the beaches at this time, so many people catch the fish illegally with laundry hampers or colanders.... we need to do everything we can to protect them.

126. Name: Kim misamore on 2019-07-10 03:26:29
Comments: It is important to protect these very interesting fish.

127. Name: Kevin Durr on 2019-07-10 04:24:52
Comments:

128. Name: Steve Howard on 2019-07-10 04:40:41
Comments:

129. Name: Sunshine Stein on 2019-07-10 05:30:16
Comments:

130. Name: Richard Strathmann on 2019-07-10 09:52:46
Comments: Like many others, I enjoyed grunion when growing up in California. Let’s keep them for future generations.
Richard Strathmann

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131. Name: Kathryn Linehan on 2019-07-10 11:06:50
Comments:

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132. Name: Jacqueline on 2019-07-10 11:55:50
Comments: I support this motion.

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133. Name: Brett Weiss on 2019-07-10 15:51:36
Comments:

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134. Name: Mike Leggett on 2019-07-10 16:01:27
Comments:

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135. Name: Brian Sardella on 2019-07-10 16:11:16
Comments:

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136. Name: Krista on 2019-07-10 16:18:16
Comments:

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137. Name: Ralph and Barbara Smith on 2019-07-10 19:02:05
Comments:

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138. Name: Monique R Myers on 2019-07-10 19:10:07
Comments:

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139. Name: Kyle Emery on 2019-07-10 20:21:07
Comments:

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140. Name: Warren johnson on 2019-07-10 21:08:42
Comments:

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141. Name: Jane Cartmill on 2019-07-10 22:32:01
Comments:

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142. Name: Gregory Martin on 2019-07-10 23:01:00
Comments: Save these magical fish!

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143. Name: Beth Mills on 2019-07-10 23:30:39

Comments:

144. Name: Wendy Nelson on 2019-07-11 02:02:25
Comments:

145. Name: Melina Watts on 2019-07-11 03:58:08
Comments: I support the recommended closures on this petition. Grunion are a spectacular part of the California biome. Thank you.

146. Name: Georgie Pfaffinger on 2019-07-11 11:16:08
Comments:

147. Name: pat cates on 2019-07-11 12:46:13
Comments:

148. Name: Parker House on 2019-07-11 17:58:50
Comments:

149. Name: MaryEllen on 2019-07-11 18:13:00
Comments:

150. Name: Tracey Guth on 2019-07-11 18:29:31
Comments:

151. Name: John McKerron on 2019-07-11 18:47:43
Comments:

152. Name: Donna mckerron on 2019-07-11 18:54:34
Comments:

153. Name: Stephanie on 2019-07-11 18:58:23
Comments:

154. Name: Kathy Wilcox on 2019-07-11 19:12:08
Comments:

155. Name: Georgia Warren on 2019-07-11 19:17:07
Comments:

156. Name: Laura Rice on 2019-07-11 19:27:41
Comments:

157. Name: Gretchen Trafton on 2019-07-11 21:36:22
Comments:

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158. Name: rebecca mckerron on 2019-07-11 21:55:56
Comments:

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159. Name: RICHARD RAMOS on 2019-07-11 22:07:29
Comments:

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160. Name: Andrew Shaw on 2019-07-11 22:50:57
Comments: So many impediments to this fish's survival. It needs all the protection it can get

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161. Name: Susie Tyler on 2019-07-12 00:36:41
Comments:

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162. Name: Callyn Shelley on 2019-07-12 01:37:28
Comments:

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163. Name: Juliana Vitagliano on 2019-07-12 01:52:53
Comments:

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164. Name: Frank Ruiz on 2019-07-12 03:27:29
Comments:

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165. Name: Naomi rasmussen on 2019-07-12 03:35:25
Comments:

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166. Name: Gabi on 2019-07-12 04:51:30
Comments:

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167. Name: James Chhor on 2019-07-12 04:57:32
Comments:

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168. Name: Orlando Alfaro on 2019-07-12 05:23:29
Comments: Fishies

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169. Name: cristina maxwell on 2019-07-12 05:48:17
Comments:

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170. Name: Levin Arst on 2019-07-12 06:30:14
Comments:

171. Name: August Uecker on 2019-07-12 06:34:33
Comments:

172. Name: Robin long on 2019-07-12 09:52:12
Comments:

173. Name: Lindaschlinger on 2019-07-12 12:48:37
Comments:

174. Name: April montoya on 2019-07-12 13:05:31
Comments:

175. Name: jessica arbogast on 2019-07-12 14:10:03
Comments:

176. Name: Ralph Appy on 2019-07-12 14:53:13
Comments:

177. Name: J bacallao on 2019-07-12 15:32:21
Comments:

178. Name: Teresa Appy on 2019-07-12 15:56:06
Comments:

179. Name: Crislyn McKerron on 2019-07-12 17:02:43
Comments:

180. Name: Thomas Baule on 2019-07-12 17:28:42
Comments:

181. Name: Darcy Taniguchi on 2019-07-12 20:20:10
Comments:

182. Name: MaryAnn Johnston on 2019-07-12 21:59:39
Comments: Every creature has a right to occupy its habitat unmolested

183. Name: Christina Owen on 2019-07-12 23:06:51
Comments:

184. Name: Joan Primeau on 2019-07-12 23:51:34
Comments:

185. Name: Caleigh on 2019-07-13 00:03:32
Comments:

186. Name: Rhonda Huffman on 2019-07-13 02:09:44
Comments:

187. Name: Mary Stahura on 2019-07-13 02:44:35
Comments:

188. Name: Dianne Joffino on 2019-07-13 03:05:53
Comments:

189. Name: Terry Conwell on 2019-07-13 03:14:12
Comments:

190. Name: Cathy Mathews on 2019-07-13 05:27:10
Comments:

191. Name: Jenna S on 2019-07-13 05:33:30
Comments:

192. Name: Gail on 2019-07-13 16:46:51
Comments:

193. Name: Kathryn Maidlow on 2019-07-14 00:43:19
Comments:

194. Name: Connie Boyer on 2019-07-14 01:09:31
Comments: An amazing species, that needs to be protected!

195. Name: Madison Findley on 2019-07-14 16:07:14
Comments:

196. Name: Danielle Zacherl on 2019-07-14 20:57:22
Comments:

197. Name: Ariana Sanchez on 2019-07-14 21:01:20
Comments:

198. Name: Christopher Koontz on 2019-07-14 21:55:03
Comments:

199. Name: Jamie Green on 2019-07-15 00:52:44
Comments:

200. Name: Jeniffier Kerr on 2019-07-15 02:18:11
Comments:

201. Name: Cynthia Kim on 2019-07-15 14:16:01
Comments:

202. Name: Sue towle on 2019-07-15 14:32:48
Comments: I support this petition. It’s fun to see them spawning!

203. Name: Steve Fiorillo on 2019-07-15 17:54:54
Comments:

204. Name: Mercedes on 2019-07-15 20:14:08
Comments:

205. Name: Jenna Segal on 2019-07-15 21:07:08
Comments:

206. Name: Lance Adams on 2019-07-15 23:30:24
Comments:

207. Name: Jayme Moldovan on 2019-07-16 00:09:17
Comments:

208. Name: Susann Maidlow on 2019-07-16 02:16:20
Comments:

209. Name: Emilie on 2019-07-16 05:20:34
Comments:

210. Name: Meredith McCarthy on 2019-07-16 15:53:41
Comments:

211. Name: Luke Ginger on 2019-07-16 16:15:47
Comments:

212. Name: Carla on 2019-07-16 18:31:34
Comments:

213. Name: Nicholas Schooler on 2019-07-16 22:35:34
Comments:

214. Name: Michael Feltner on 2019-07-16 22:36:34
Comments:

215. Name: Molly Stallcup on 2019-07-16 22:40:07
Comments:

216. Name: Donna Nofziger on 2019-07-16 23:29:57
Comments:

217. Name: Rosi Dagit on 2019-07-16 23:37:16
Comments:

218. Name: Amanda on 2019-07-16 23:38:54
Comments:

219. Name: Steve Walters on 2019-07-17 01:16:45
Comments:

220. Name: Donald Buth on 2019-07-17 02:10:46
Comments:

221. Name: Danilo Martinez on 2019-07-17 03:06:45
Comments:

222. Name: Natalie Rizzo on 2019-07-17 15:31:11
Comments:

223. Name: Lorrie Kole on 2019-07-17 15:48:37
Comments: Protect this fish, these issues are important to the planet!

224. Name: Edwin Neely on 2019-07-17 15:59:53
Comments: I will move that our local interpretive association supports these proposals and forward the petition our members

225. Name: John Mann on 2019-07-17 16:48:24
Comments:

226. Name: Ben Holt on 2019-07-18 03:40:25

Comments: great idea. important and unique species

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227. Name: Deborah Ann Flores on 2019-07-18 07:12:33
Comments:

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228. Name: Katie on 2019-07-18 16:37:56
Comments:

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229. Name: Eric Stevens on 2019-07-18 17:04:19
Comments:

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230. Name: Erin Barlow on 2019-07-18 17:06:03
Comments:

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231. Name: Marlene Alvarado on 2019-07-18 17:42:57
Comments:

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232. Name: Timothy Lucas on 2019-07-18 21:22:27
Comments:

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233. Name: Dennis Simmons on 2019-07-18 23:00:44
Comments: As President of the Beach Ecology Coalition I all agree that making June closed to taking grunion, as it was originally, is a positive step in maintaining a viable population.

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234. Name: Judy on 2019-07-19 00:37:20
Comments:

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235. Name: Shelley Glenn Lee on 2019-07-19 02:33:16
Comments:

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236. Name: Danielle Furuichi on 2019-07-19 17:03:40
Comments:

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237. Name: Leah Reidenbach on 2019-07-20 13:12:04
Comments:

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238. Name: Carly Keen on 2019-07-22 18:08:05
Comments:

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239. Name: Donna Stern on 2019-07-22 18:31:04
Comments:

240. Name: Ahlia Jimenez on 2019-07-22 18:47:05
Comments:

241. Name: Nick Steers on 2019-07-22 18:51:33
Comments: Please protect the grunion!

242. Name: melissa brown on 2019-07-22 19:14:48
Comments: Please save our fish they are vulnerable and by allowing them to be caught on shore with no protections is impacting their ability to maintain their numbers! Please give this species a chance and extend closed season till July

243. Name: Marie McTaggart on 2019-07-22 19:16:16
Comments: Let us not exacerbate the demise of this interesting gift of nature!

244. Name: Elizabeth Thoren on 2019-07-22 20:04:37
Comments:

245. Name: Cynthia Jenson-Elliott on 2019-07-22 20:54:25
Comments: Please protect the grunion! I saw my first grunion run in 1978. Today, I rarely see them when I make the midnight trek. They are an iconic California species! Please add June to the protected months for these amazing animals.
Thank you!

246. Name: Michelle Winternolte on 2019-07-22 21:28:12
Comments:

247. Name: Pearl Crosier on 2019-07-22 22:07:03
Comments:

248. Name: Denise Thompson on 2019-07-22 22:40:29
Comments:

249. Name: Dave James on 2019-07-22 23:35:36
Comments: Please protect this resource.

250. Name: David Driver on 2019-07-23 02:53:53
Comments:

251. Name: Tara Crow on 2019-07-23 02:57:13
Comments:

252. Name: Carl J Carranza on 2019-07-23 03:49:37
Comments:

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253. Name: Jenna Lloyd on 2019-07-23 05:11:12
Comments: Please save the grunion!

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254. Name: Jim Elliott on 2019-07-23 05:59:38
Comments:

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255. Name: VINCENT FARNSWORTH on 2019-07-23 10:47:05
Comments:

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256. Name: Gwendolyn Albert on 2019-07-23 12:07:57
Comments:

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257. Name: Maria on 2019-07-23 13:29:58
Comments:

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258. Name: Sonya Salame on 2019-07-23 14:14:16
Comments:

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259. Name: Jammie on 2019-07-23 14:55:33
Comments:

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260. Name: Christopher Uyeda on 2019-07-23 15:22:33
Comments:

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261. Name: Kelly Leszczynski on 2019-07-23 17:19:00
Comments: Please Protect our wildlife and habitats, especially this amazing fish.

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262. Name: Althea Marks on 2019-07-23 18:27:49
Comments:

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263. Name: James Murdick on 2019-07-23 18:31:20
Comments:

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264. Name: Kathrin Nolan on 2019-07-23 19:03:18
Comments: Grunion are the coolest thing for children and adults to see. Please protect them.

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265. Name: Mary Saeby on 2019-07-23 23:21:22
Comments: Protect the Grunions! Please!

266. Name: Fred on 2019-07-24 01:27:07
Comments:

267. Name: Bill Dreskin on 2019-07-24 04:35:46
Comments:

268. Name: John Murphy on 2019-07-24 06:33:40
Comments:

269. Name: Isabella Gonzalez on 2019-07-24 20:02:54
Comments:

270. Name: Jennifer Mongolo on 2019-07-24 21:15:33
Comments:

271. Name: Dominique Monie on 2019-07-24 22:31:27
Comments: Please protect the grunion! I'm a volunteer Grunion Greeter and getting to see the grunion come up on the beach is really special. We need to protect this species with no-take months and bag limits. Thanks!