

State of California
The Resources Agency
Department of Fish and Game

RECOMMENDATIONS
FOR USE OF TELEMETRY SYSTEMS^{1/}

by

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Based upon the results and recommendations submitted in the Telemetry Evaluation report, my recommendations for the most appropriate telemetry systems for wildlife investigation are the following:

1. Species which transverse large areas, such as elk, mountain lion or migratory deer, can best be studied using the Ocean Applied Research telemetry equipment. The increased power output of the transmitter is necessary to effectively increase the range so that a minimum amount of time be spent in locating the tagged animal. I believe the relative, cost of the equipment would soon be offset by the net savings in man-hours and tracking equipment-hours by using this telemetry system.
2. Species which transverse small areas and over accessible terrain, such as coyotes, can be studied very efficiently with the A. R. Johnson transmitter and Johnson 350 receiver. The Johnson 350 receiver works well as a mobile receiver, may be adapted for use in an aircraft, or be used to a limited extent as a portable hand-held receiver. The A. R. Johnson transmitter is especially suited for species where the transmitter weight may be a factor in altering the normal behavior of the species. This collar is also advised when little chance exists for the recapture of the tagged animal for removal of the collar, since this unit provides the maximum range per unit of cost.
3. Species which transverse small areas but over inaccessible terrain, such as coyotes or bobcats in mountainous regions, should be telemetered by either fixed receivers or receivers used in aircraft. The Ocean Applied Research ADFS-210 works well as a fixed receiver and can be readily adapted to an aircraft. The choice of transmitters for this type of wildlife investigation would be either the OAR or A. R. Johnson

transmitter. Both have excellent range over natural obstructions. The final selection should be made with the packaging of the transmitter and the possibility of recapture of the tagged animal for battery renewal as criteria.

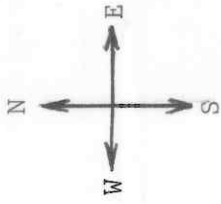
4. The Ocean Applied Research FR-206 receiver is an excellent receiver with a self-contained power source. This receiver should be used in conjunction with (1), (2), and (3), above, when manual tracking by foot becomes necessary to pinpoint precise animal locations or if the species is a fast-moving species, in which case the direction and approximate distance need to be determined on one fix of the transmitter signal. A hypothetical situation has been demonstrated (Figure 1) which emphasizes the importance of knowing approximate location with one fix.

To conclude, the telemetry system most suited for wildlife investigation depends upon the species being studied, its behavior, accessibility for tracking, and the environmental and climatic conditions of the study area. When preliminary investigations have determined these parameters, then the appropriate telemetry system can be selected.

I would strongly urge that the California Department of Fish and Game apply to the F.C.C. for a license to operate transmitters in the 250-500 milliwatt range. Transmitters in this range were demonstrated to greatly extend the tracking range of the telemetry system and would be most useful in studying species which are difficult to approach.

It should also be noted that a telemetry system will only function as well as the capacity of the system and the personnel operating the system. If the behavior of the species is the desired result, in addition to movement and activity, the monitoring of the tagged animal must be on a 24-hour

surveillance. However, if spot locations of the animal are all that is desired, weekly checks on his position will suffice. If the latter is planned, the need for elaborate equipment would be unlikely, while intense monitoring of a species would require more sophisticated equipment to insure the reliability of the results obtained.



SCALE:
3 mm = 1 mile

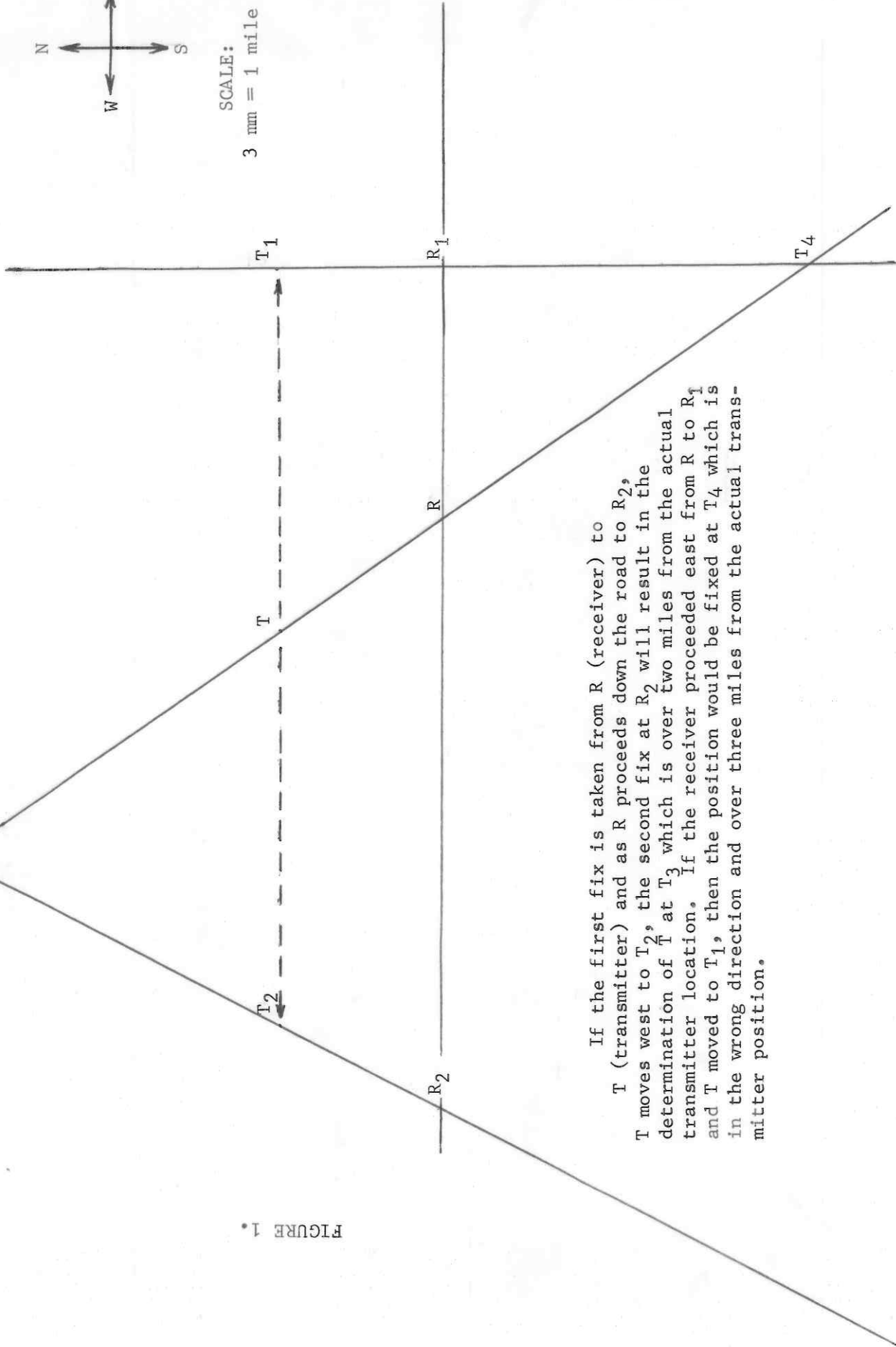


FIGURE 1.

If the first fix is taken from R (receiver) to T (transmitter) and as R proceeds down the road to R₂, T moves west to T₂, the second fix at R₂ will result in the determination of T at T₃ which is over two miles from the actual transmitter location. If the receiver proceeded east from R to R₁ and T moved to T₁, then the position would be fixed at T₄ which is in the wrong direction and over three miles from the actual transmitter position.