EXHIBIT 1

F.) Composite stereo signal which complies with part 73 for United States F.M. broadcast stations.

1. 75 KHz maximum carrier deviation
2. 16 KHz maximum audio frequency
3. 75 KHz maximum composite audio frequency

G.) 800 KHz

1. Transmitter spectrum within 200 KHz band centered at 63.000 MHz
2. Allow additional spectrum so receiver selectivity will adequately reject any potential adjacent channel.

Enhancing Predator Trapping Success Using Interactive Audio Attractants

Background

Predatory furbearers are intelligent, secretive, dispersed, less abundant than herbivores, and often among the most poorly understood of all wildlife species. Several species in Michigan are listed as "Endangered", "Threatened", or are protected by Federal treaty regulations, while several others have prospered enough to create controversy over harvest regulations. Finding a predatory furbearer free of all controversy can be a daunting task! Progressive management of these species often requires studies to be designed in which a representative sample of animals needs to be trapped, handled, and released with as little trauma as possible.

Trapping predatory furbearers for research is a balancing act where the techniques, timing, and success of the effort are a compromise among needs to minimize trauma to the animal or dependent offspring, avoid theft and vandalism by user groups, fit the work schedules of available personnel, and meet budget limitations. These constraints seriously compromise research results by elevating the cost per animal handled, and reducing the size of the sample. The cost of trapping and handling bobcats (*Felis rufus*) in and near Roscommon County from 1991-1996 was $417 each, and the cost of trapping and handling the much less abundant gray wolf (*Canis lupus*) in and near Iron County from 1992-1996 was ~$4,070 each. Clearly, anything that could improve trapping success for predatory furbearers within the usual constraints of a study, would be valuable for both the additional information gathered, and the savings realized from a more efficient trapping operation.

Bobcats were caught in 1991 and 1992 using a variety of traditional trapping techniques. The study area was monitored throughout the year to determine where bobcats were most active. Knowledge of bobcat behavior and movement patterns allowed "trail" sets to be placed in strategic locations, and urine and other scent attractants were used to build "urine post" and "dirt hole" sets. A variety of audio and visual attractants were tested during the next four years in an attempt to enhance bobcat trapping success and improve bobcat visitation during experimental scent station surveys. The response of bobcats to a variety of audio and visual attractants improved trapping success only intermittently, despite significantly increased visitation by bobcats to scent stations using an appropriate audio attractant. Bobcats can be as cautious as they are fickle around trap sites, and none of the attractants used could *respond* to the activity of a predator. Therefore, the array of other fully interacting smells, sounds, and sights may have outcompeted the trap site attractants for the attention of passing bobcats.

This problem was approached in 1996 by designing and building a prototype of an interactive audio attractant (IAA). This devise is housed in a plastic case about the size of a shoe box, and uses a 6 volt system to power an amplifier which broadcasts the cry of a" jackrabbit (*Lepus* spp.) in distress" from a speaker. When a warm body is sensed by one of the passive infrared motion detectors wired to the IAA, the "long call" is replaced by a softer, more plaintive "short call" of a dying jackrabbit. This is repeated until a warm body is no longer detected, at which point the IAA reverts back to the "long call".

Both calls used in this devise are customized recordings, stored digitally in EPROM chips. There are no moving parts, and the IAA works equally well in summer or winter. Limited field testing during the final few days of bobcat trapping in 1996, and intermittent testing in January and February has shown promise. Bobcats, and coyotes (*Canis latrans*) have been attracted to the IAA, from up to 75 yards. The primary shortcomings of this prototype are a limited production cost of ~ $450 each, and a relatively high probability of theft or vandalism.

Broadcast Approach

The related problems of producing a limited number of costly, electronically sophisticated IAA's, and then exposing them to theft and vandalism during use can be avoided by using a broadcast approach. Digital storage, production, and transmission of both the "long" and "short" calls can occur from a locked building with electrical service. The resulting radio signals would be received by IAA's (modified FM radios), and environmental input would be provided by passive infrared motion detectors wired to the unit. The IAA's in this system would have a limited production cost of ~ $50 each, and would be much smaller than the prototype.

The most costly components of this system are available within the Department as surplus or can be shared without compromising other uses. Two personal computers of modest capabilities can store and produce digital quality calls (≥"386" microprocessor, ≥ Windows 3.1 operating system, and ≥4 MB of RAM). Two transmitters would transmit the signal on unused frequencies from the DNR radio tower at Mio. Space is available for the addition of two antennas. The PC's and transmitters would be housed securely in existing facilities at the tower sight.

Field Testing

The objectives of testing this system would be to assess the effectiveness of IAA's for improving trapping success in a research setting, and to determine if the broadcast approach to activating a network of IAA's is cost-effective for an agency with an existing broadcasting infrastructure.

The experimental design proposed for field testing this system would use an absence-presence approach to reduce variance between the experimental (IAA's on) and control (IAA's off) treatments. IAA's would be placed at 15 sites in Oscoda county where bobcats are known to be active. Several #3 Soft Catch® traps would be set at each site in the locations most likely to catch bobcats attracted to the IAA. Trapping would begin in late July, 1997, with the traps set but the IAA system off for the first 5 nights. Traps would be checked daily, and records kept of all animals captured. Any bobcats caught would be anesthetized, marked with ear tags, handled, and released using a protocol identical to the one used in recent bobcat research in the Roscommon County vicinity. Trapping would continue for the second 5 nights with the IAA system on, the third 5 nights with the IAA system off, and the fourth 5 nights with the IAA system on. A professional trapper, Mr. Damien Lunning of Mio, will be hired to locate the sites where IAA's will be tested, maintain the trap line, handle the animals caught, and document the results.

The effectiveness of using IAA's to enhance bobcat trapping success would be tested by comparing four measures of attraction between the experimental and control treatments. The frequencies of "walk-bys" (Fresh bobcat tracks passing a trap site without altering direction to investigate.), "visits" (Fresh tracks showing a trap site was investigated, by a bobcat, but it was not caught and held.), captures, and recaptures will be compared by treatment and trapping period. The frequency of recaptures with IAA's on, would be particularly revealing of the attraction of this system. If the results after four, 5-night trapping periods show a positive effect, the IAA's will be moved to a new set of locations in Oscoda County, and the experiment repeated. Data from the sum of 20 nights of trapping at 30 sites should permit appropriate statistical analysis, and determine the feasibility of using a broadcast approach to activate a network of IAA's.

Draft Research Proposal

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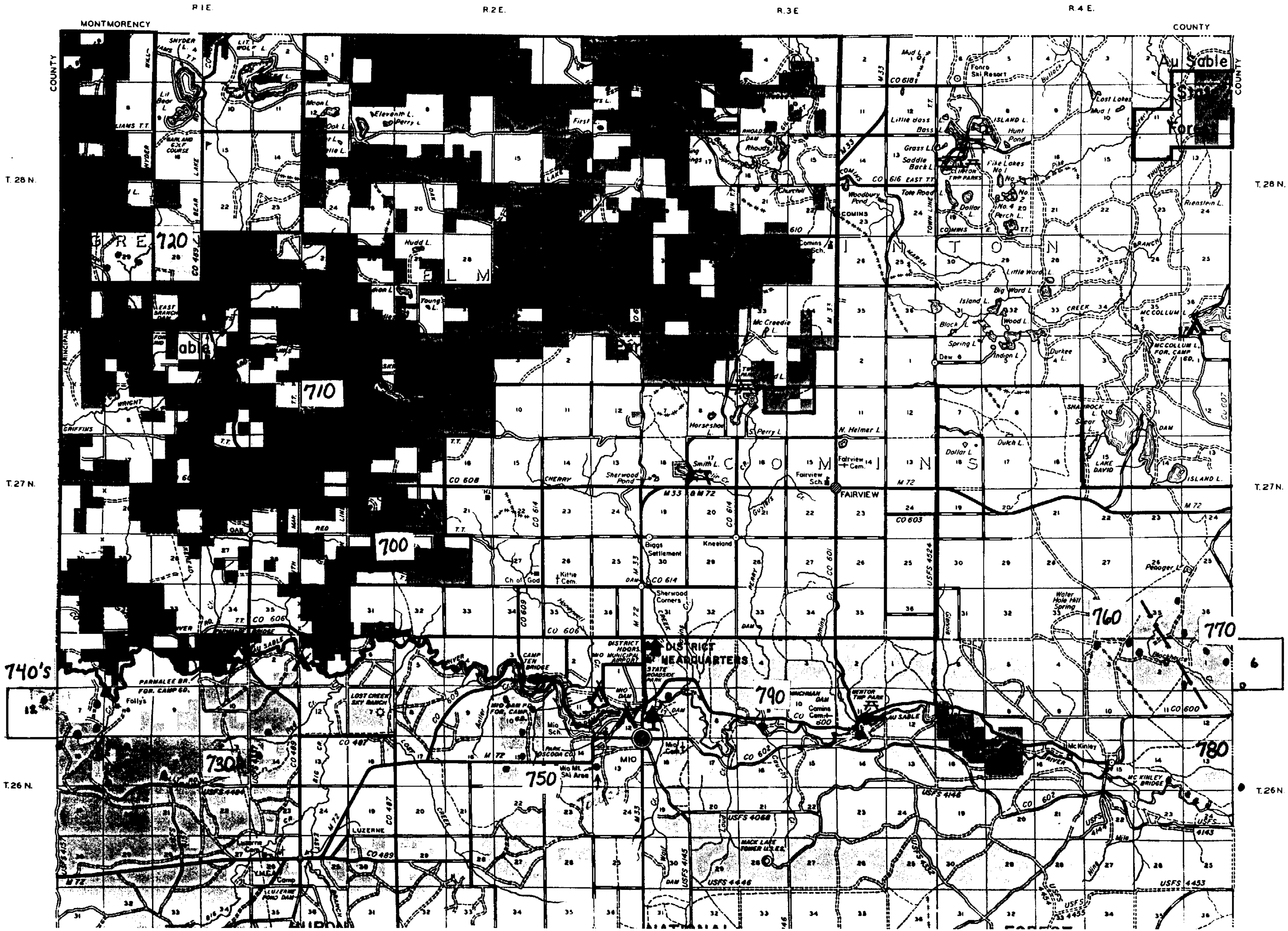
OSCODA COUNTY

SCALE IN MILES

Areas where receivers could be located



13. 1.) Audio amplitude & frequency limiting as well as composite signal generation:

Orban 8000 Compressor/Limiter and Stereo generator

2.) Radio Frequency Exciter:

QEI model 675 exciter

3.) Final radio frequency amplifier:

Motorola Micor 100W Low Band VHF FM mobil tranceiver. Note: we will bypass modulation & exciter stages and retune output final amplifier to 63 MHz.