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CHEMICAL RESTRAINT OF ANTARCTIC PHOCID PINNIPEDS

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Introduction: Effective and safe immobilization of Antarctic seals is essential for addressing questions about their behaviours that require attachment of various kinds of telemetry instruments.

Methods: We chemically immobilized nine Ross seals (*Ommatophoca rossii*), 22 Weddell seals (*Leptonychotes weddellii*) and 45 crabeater seals (*Lobodon carcinophaga*) in pack ice and fast ice habitats in the western Amundsen Sea and throughout the Ross Sea, Antarctica, from 1997 through 2000. We used intramuscular or intravenous injections of sedatives and anesthetics and assessed the physical and physiological status of seals from injection to recovery while conducting veterinary medical examinations and attaching telemetry instruments.

Results: Intravenous diazepam provided safe and effective immobilization for Ross and Weddell seals for procedures including blood sample collection, microbiological swabs, morphometrics (including weighing with tripod and sling), bioelectric impedance measurements and telemetry instrument attachment. Addition of lidocaine local anesthetic facilitated additional procedures such as full-thickness blubber and skin biopsies. Three protocols were used to immobilize crabeater seals: ketamine hydrochloride (HCL) alone, ketamine combined with xylazine HCL and ketamine combined with diazepam. The alpha-2 antagonist yohimbine HCL was used successfully on several occasions to reverse the effects of xylazine. The ketamine/xylazine combination for crabeater seals provided the shortest induction and total handling times, was less likely to require an additional dose of ketamine to complete handling procedures, and provided an additional margin of safety due to the reversibility of xylazine.

Discussion: We found these protocols to be robust in the challenging and changeable environmental conditions of fast ice and pack ice. Further, they provided quick induction and rapid recovery and ensured the safety and vitality of the seals and the researchers.