

INTRODUCTION

Rockfish (Sebastes spp.) are a common commercially caught fish group taken along the Pacific coast of North America (PFMC 1990). Rockfish represent 38 percent of the total 1990 groundfish landings (exclusive of Pacific whiting, Merluccius productus) from Washington, Oregon, and California. There are 69 known species of rockfish inhabiting the waters of the Pacific coast of North America (Anderson 1983). Due to the diversity of habitat and species association, fisheries management of this group is complex, with some species managed singularly and others in groups. The management of this group is further complicated by the large fluctuations in recruitment (Leaman and Beamish 1984). In fact, a single dominant year-class can sustain a fishery for a number of years.

A prerequisite to both management and research is the ability to identify individual rockfish species. This presents a problem because rockfish have a complex life history, including internal fertilization, viviparity, pelagic larvae, both pelagic and benthic juveniles, and finally adults. Identifications are most difficult in the pelagic larval and juvenile stages, where the young fish can have completely different pigmentation than in the adult phase. Many methods have evolved throughout the years to differentiate these earlier stages, but pigmentation and meristic differences (Moser et al. 1977; Laroche and Richardson

1980, 1981; Moser et al. 1985; Kendall and Lenarz 1987; Kendall 1991) remain the methods of choice.

In this report, we present information on the methods that are currently being used at our laboratory to identify pelagic juvenile rockfish. We have included papers on the use of pigment patterns to distinguish Sebastes flavidus from S. melanops; use of the cleithra and caudal bones to separate species; and have included two meristic keys, including one computerized. The paper on pigment patterns and the non-computerized key were developed using fresh (and frozen) specimens, while the remaining papers were developed to deal with the particularly difficult task of identifying rockfish from predator stomachs, where pigment patterns have usually been destroyed. In the latter instance, some unusual structures were examined because these structures typically were some of the last structures to be digested and, thus, presented the best opportunity to help us in separating species.

The manuscripts in this report were written to be used independently of one another, but can be combined. An example of one possible combination of articles would be if one had a fresh fish to be identified. First, the fin rays would be counted and the meristic key used to identify the subject fish. If the fish keyed out to be a yellowtail rockfish (S. flavidus), the paper that distinguishes black (S. melanops) and yellowtail rockfish may be used to check if the pigment pattern observed matches the description in that manuscript. Another example may be in

examining a fish found in a predator stomach. If the pigmentation has been destroyed, then one would count the fin rays and gill rakers and use the computerized (or the non-computerized) key. If some of the fins did not have a full complement of rays, it may not be possible to identify this fish by use of the keys alone. Then one should try examining the cleithrum or the caudal complex. This may present enough information to identify the fish to species.

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METHODS USED TO IDENTIFY PELAGIC JUVENILE ROCKFISH (GENUS *SEBASTES*) OCCURRING ALONG THE COAST OF CENTRAL CALIFORNIA

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