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### IDENTIFICATION OF ADULT PACIFIC AND AMERICAN GOLDEN PLOVERS IN THEIR SOUTHBOUND MIGRATION

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Connors (1983) and Connors et al. (1993) confirmed that American (*Pluvialis dominica*) and Pacific (*P. fulva*) Golden-Plovers breeding in sympatry in Alaska are distinct species, a conclusion adopted by the A.O.U. (1993). Distinguishing these two species requires that the bird's age or plumage class be determined first before the species can be identified. At any stage the identification requires close study, but adults in molt are the most difficult. In both species some prebasic molt takes place during fall migration. Because some field marks useful in juvenal or basic plumage, such as the color of the supercilium, do not apply to molting adults, many purported sightings of American Golden-Plovers have been questioned, and the distribution of adults in fall migration is uncertain. All or nearly all American Golden-Plovers occurring along the Pacific coast south of Alaska in fall migration are juveniles. In fact, there may be no certain records of adults in this region at this season (Paulson 1993). Because of uncertainty over published records, the California Bird Records Committee added the American Golden-Plover to its review list (Cole and McCaskie 2004), seeking documentation for all American Golden-Plovers in California from 2004 onward. This note is an attempt to focus attention on this issue in field identification.

The Pacific Golden-Plover breeds largely in Siberia east to westernmost Alaska and winters along the coasts of Asia and Australia, on Pacific islands, and in small numbers in California. The American Golden-Plover breeds from Alaska east to Baffin Island and winters in southern South America. Although some populations of the Pacific have migrations as long as those of the American, some Pacific Golden-Plovers breeding in Alaska perform a comparatively short but nonstop migration to the Hawaiian Islands. American Golden-Plovers winter in the southern hemisphere, almost all in the pampas region of eastern Argentina. Any golden-plover in winter in California is almost certainly a Pacific Golden-Plover.

When golden-plovers are in full alternate plumage, the male American is distinguished by bulging teardrop-shaped white patches on the sides of the breast, black flanks, and black undertail coverts. At this stage the male Pacific has a white strip of more or less uniform width extending from the sides of the breast through the flanks and partly white undertail coverts. In both species females have a variable number of white feathers scattered among the black ones on the underparts, but they maintain a pattern similar to that of the males.

While the birds are in their breeding range, the alternate plumage of both species begins to change through slow molting during the incubation period, when a less conspicuous plumage is more advantageous than during courtship. Jukema et al. (2003) proposed that this molt is distinct from the prebasic molt, although it may be part of a protracted prebasic molt. Once body molt begins in earnest, it affects the head and neck first. The upperparts, central belly, and breast appear to be some of the last body feathers to be molted. Even well into their prebasic molt some individuals, especially male American Golden-Plovers, can be identified by their remaining alternate plumage.

The top photo on this issue's back cover shows one such bird. Although a great proportion of the body is in basic plumage, we can see several features that identify this individual as an American Golden-Plover. Molt of the flanks is nearly complete, but a

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few telltale black feathers remain, suggesting the black flank pattern of the American. There is a ghost pattern of the teardrop-shaped white patch on the sides of the breast typical of the American Golden-Plover; this contrasting patch remains well into the prebasic molt but is not present on the Pacific Golden-Plover. Finally, the undertail coverts show a substantial black, again suggesting the American Golden-Plover.

The lower photo is of a Pacific Golden-Plover in a similar stage of molt. This bird shows no ghost of a white teardrop on the sides of the breast, no black on the flanks, and no black on the undertail coverts. On the upperparts the more worn feathers of the alternate plumage can be distinguished from the fresh feathers of the basic plumage; the latter plumage shows bright golden colors, unlike the more subdued and grayish feathers of the American Golden-Plover. At this stage of molt the whitish supercilium, typical of the American Golden-Plover in basic plumage, is of no use in distinguishing these two species, as the white supercilium of the alternate plumage may still remain on a Pacific Golden-Plover, as seen in this lower photo.

Structurally, the upper bird is long-winged, with a long primary and wing extension, as is typical of an American Golden-Plover. The primary projection (distance the primaries project past the tertials) is longer on the American Golden-Plover, with four or five primary tips visible past the tertials. On the Pacific Golden-Plover only two or three are visible (Dunn et al. 1987, Johnson and Johnson 2004). Similarly, wing projection (distance primaries extend past the end of the tail) is less than 1 cm in the Pacific Golden-Plover but 1–2 cm in the American Golden-Plover (Johnson and Johnson 2004). The differences in primary extension may be accentuated by apparently longer tertials in the Pacific Golden-Plover (pers. obs. and examination of photos), although tertial lengths have not been quantified. There is overlap between the species in bill length and thickness and in leg length. The bill and legs average longer in the Pacific Golden-Plover, although the American Golden-Plover is larger in overall size, as reflected in other measurements. Although not diagnostic, the longer-billed and longer-legged look of the Pacific Golden-Plover in the lower photo is a useful supplementary feature. Males and females are about the same size in each species.

The timing and extent of molt are correlated with migration distance, age, and the bird's reproductive and nutritional status. Molt in golden-plovers varies substantially not only by species but by age and migratory status. Understanding these differences may help in field identification. Juveniles of both species arrive on the wintering grounds in juvenal plumage. Pacific Golden-Plovers may remain in the winter range during their first and sometimes second summer; these over-summering birds tend to molt into a dull alternate plumage resembling the basic plumage. But many one-year-old birds move north to the breeding grounds in their first spring, and these tend to assume a brighter alternate plumage. Surprisingly, Pacific Golden-Plovers never molt primaries during their first winter. Immatures summering in the winter range molt their wings during their first summer (July–November), whereas immatures migrating to the breeding range do so in their second autumn (August–January) (Johnson and Johnson 1983). Young Pacific Golden-Plovers may perform three migrations on juvenal primaries! According to Johnson and Johnson (1983), American Golden-Plovers, on the other hand, molt their primaries during their first winter. Therefore, in their first spring, they show primary wear similar to that of adults, while in Pacific Golden-Plovers the first spring birds' primaries are noticeably more worn than those of the adults. In the golden-plovers as in the Black-bellied Plover (*P. squatarola*), it is unclear if there are one or two body molts in the first winter. The bright plumage colors acquired by some first-spring birds may not be due to a molt different from that of birds retaining a subdued plumage; rather, the plumage differences may be due to differences in hormone levels controlling the colors of the feathers as they grow (Howell and Pyle 2002).

The molt schedule of adult Pacific Golden-Plovers has been well documented, but the same cannot be said for the American Golden-Plover. The available evidence is that

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the molt of the American is significantly later than that of the Pacific, this difference being most clear in wing molt. The schedule of body molt is more poorly known. Most adult Pacific Golden-Plovers return to wintering areas in August with one quarter or less of the alternate plumage remaining; fewer than 15% show a larger percentage of alternate plumage upon return (Johnson and Johnson 1983). Body molt is therefore performed largely on the breeding grounds, or at a migration stop-over site, if any. Therefore fall migrant adult Pacific Golden-Plovers should show a mix of basic and alternate body plumage when they arrive in California. Primary molt of adult Pacific Golden-Plovers tends to occur on the wintering grounds (August–December), although a few individuals begin primary molt on the breeding grounds (Johnson and Johnson 1983). American Golden-Plovers molt little of the body on the breeding grounds, and no primaries are molted there (Cramp and Simmons 1983). Body molt appears to occur at migratory stop-over sites, as less than 50% of American Golden-Plovers arriving in Argentina show traces of alternate plumage (German Pugnali pers. comm.). Primary molt in the American Golden-Plover takes place in the non-breeding range, and adults are in the early stage of wing molt in mid-October (pers. obs.). In comparison, Pacific Golden-Plovers are at a similar stage of primary molt from August to mid September (Johnson and Johnson 1983), suggesting that the American molts its wings one to two months later than the Pacific. Thus an autumn golden-plover in wing molt in California, and probably anywhere in North America, is almost certainly a Pacific.

To identify a southbound adult golden-plover concentrate on its structure, particularly primary projection, and the remnants of alternate plumage. Molt timing and extent may help in making an identification; in particular, a golden-plover in wing molt in North America is much more likely to be a Pacific, and a first-summer individual with well-worn primaries again points to a likely Pacific. A careful use of structure, molt timing, and remnants of alternate plumage should be enough to identify the majority of molting adult golden-plovers. Observers are encouraged to fill in the blanks of what is known on the timing of body molt in these plovers, particularly with respect to the American Golden-Plover. A critical question still to be answered is when the tertials are dropped.

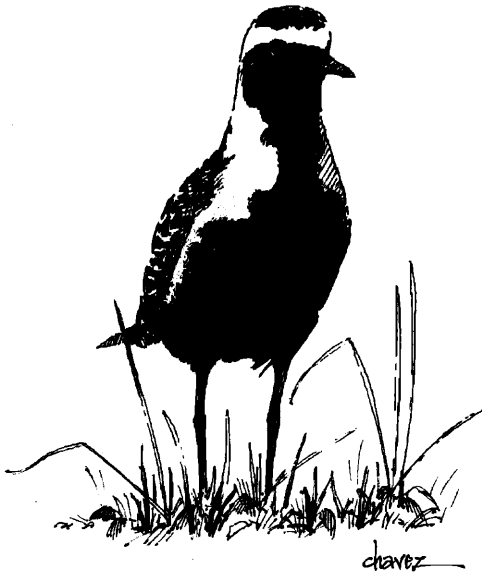
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American Golden-Plover

Sketch by Jamie M. Chavez

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