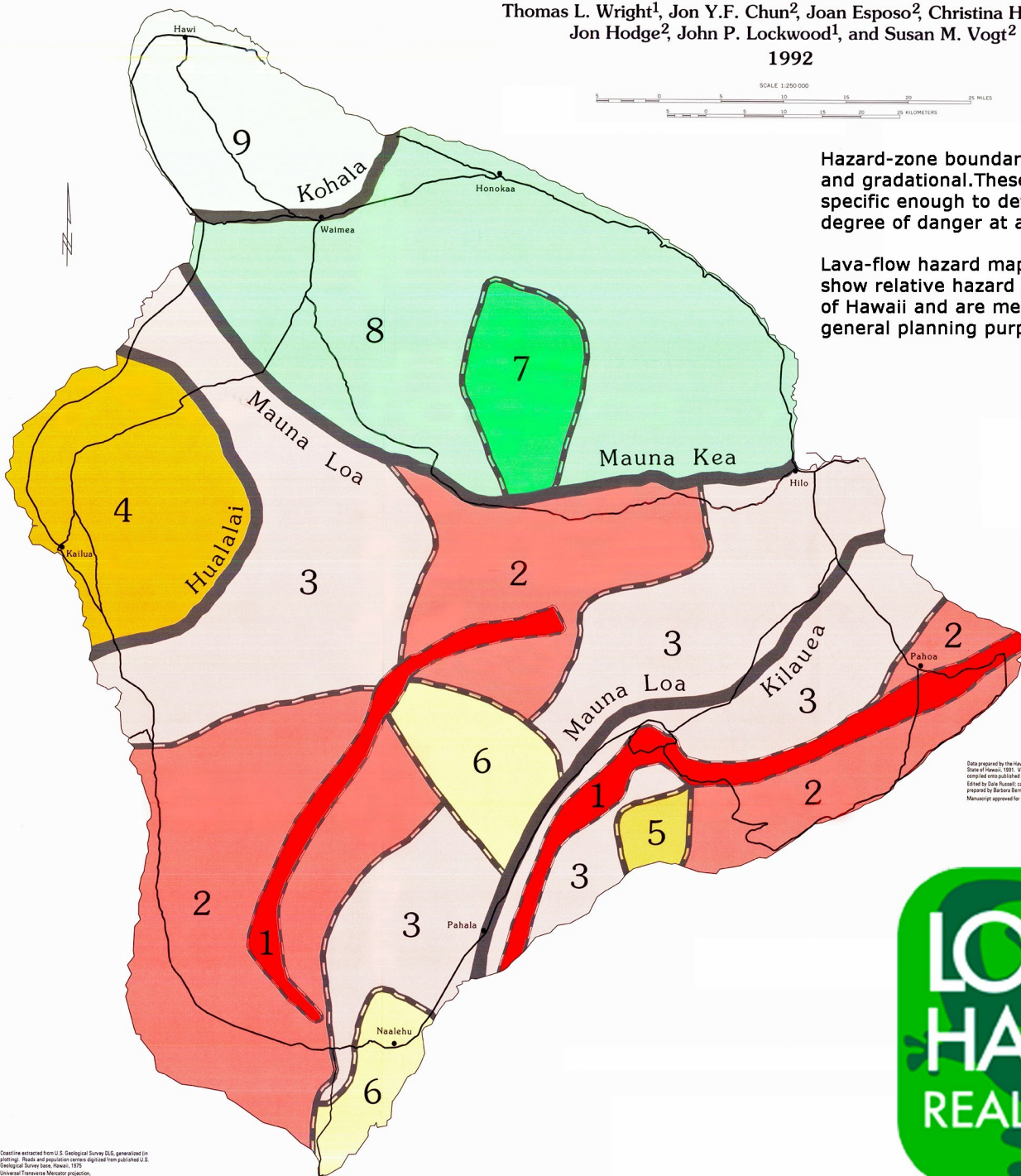
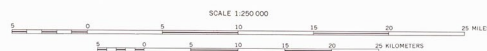


MAP SHOWING LAVA-FLOW HAZARD ZONES, ISLAND OF HAWAII

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-2193

By
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1992



Hazard-zone boundaries are approximate and gradational. These boundaries are not specific enough to determine the absolute degree of danger at any particular site.

Lava-flow hazard maps are designed to show relative hazard across the Island of Hawaii and are meant to be used for general planning purposes only.

↑
Increasing severity
of hazard

EXPLANATION

Lava-flow hazard zones—Based on location of eruptive vents, past lava coverage, and topography

- 1** Zone 1—Includes summits and rift zones of Kilauea and Mauna Loa, where vents have been repeatedly active in historical time
- 2** Zone 2—Areas adjacent to and downlope of zone 1. Fifteen to twenty-five percent of zone 2 has been covered by lava since 1800, and 25 to 75 percent has been covered within the past 750 years. Relative hazard within zone 2 decreases gradually as one moves away from zone 1
- 3** Zone 3—Areas less hazardous than zone 2 because of greater distance from recently active vents and (or) because of topography. One to five percent of zone 3 has been covered since 1800, and 15 to 75 percent has been covered within the past 750 years
- 4** Zone 4—Includes all of Hualalai, where the frequency of eruptions is lower than that for Kilauea or Mauna Loa. Lava coverage is proportionally smaller, about 5 percent since 1800, and less than 15 percent within the past 750 years
- 5** Zone 5—Area on Kilauea currently protected by topography
- 6** Zone 6—Two areas on Mauna Loa, both protected by topography
- 7** Zone 7—Younger part of dormant volcano Mauna Kea. Twenty percent of this area was covered by lava in the past 10,000 years
- 8** Zone 8—Remaining part of Mauna Kea. Only a few percent of this area has been covered by lava in the past 10,000 years
- 9** Zone 9—Kohala Volcano, which last erupted over 60,000 years ago

Boundaries—Approximately located and gradational

- Lava-flow hazard zone 1
- Lava-flow hazard zones 2 through 9
- Volcano

DISCUSSION

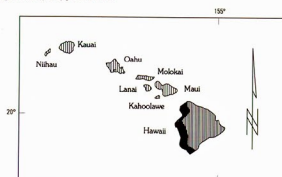
This map shows lava-flow hazard zones for the five volcanoes on the Island of Hawaii. Volcano boundaries are shown as heavy, dark bands, reflecting the overlapping of lava flows from adjacent volcanoes along their common boundary. Hazard-zone boundaries are drawn as double lines because of the geologic uncertainty in their placement. Most boundaries are gradational, and the change in the degree of hazard can be found over a distance of a mile or more. The general principles used to place hazard-zone boundaries are discussed by Mullineux and others (1987) and Heliker (1990). The differences between the boundaries presented here and in Heliker (1990) reflect new data used in the compilation of a geologic map for the Island of Hawaii (E.W. Wolfe and Jean Morris, unpub. data, 1989).

The primary source of information for volcano boundaries and generalized ages of lava flows for all five volcanoes on the Island of Hawaii is the geologic map of Hawaii (E.W. Wolfe and Jean Morris, unpub. data, 1989). More detailed information is available for the three active volcanoes. For Hualalai, see Moore and others (1987) and Moore and Clague (1991); for Mauna Loa, see Lockwood and Lipman (1987), and for Kilauea, see Holcomb (1987) and Moore and Trusdell (1991).

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Data prepared by the Hawaii Office of State Planning using the GIS of the State of Hawaii, 1991. Volcano and hazard boundaries digitized from data compiled and published by U.S. Geological Survey, Hawaii, 1975. Edited by Sara Russell; cartography by Sandy Mangrove; prepared by Barbara Berninger. Manuscript approved for publication, March 2, 1992.



INDEX MAP SHOWING THE ISLANDS OF HAWAII

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Coastline extracted from U.S. Geological Survey 5:25, generalized in plotting. Photo and population names digitized from published U.S. Geological Survey base, Hawaii, 1975. Universal Transverse Mercator projection. Old Hawaiian datum.