

*Aerial Wildland Firefighting
Resources in Fire Suppression
Activities: an example USDA Forest
Service*

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Aerial Wildland Firefighting Resources

Wildfires are a significant social problem affecting millions of people worldwide and causing major economic impacts at all levels. Global estimates of the area affected by wildfires range anywhere from 3 to 6 million square kilometers annually



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Aerial Wildland Firefighting Resources

- Significant events in wildfire management
 - In the USA
 - Western fires of 1910
 - Fire exclusion policies
 - Change in fire exclusion policies
 - Advent of aerial firefighting
 - Wildland-urban interface (WUI)
 - Catastrophic fires of 1990s and of 2000s



Aerial Wildland Firefighting Resources

- Significant events in wildfire management
 - Other parts of the world
 - Large fires
 - 1998 in Mexico
 - 2003 in Portugal
 - 2007 in Greece
 - 2009 Australia
 - 2010 Russia
 - Wildland-Urban Interface (WUI)
 - Abandonment of rural areas



Aerial Wildland Firefighting Resources

- Wildland fire management programs in US
 - Five principal components
 - prevention
 - detection
 - presuppression
 - fuels management
 - suppression
- } preparedness



Aerial Wildland Firefighting Resources

- **Suppression firefighting resources**
 - Ground forces
 - Mechanized forces
 - Aerial delivered crews
 - Aerial resources



Aerial Wildland Firefighting Resources

- Aerial resources
 - Fixed-wing
 - Transportation planes
 - Lead planes
 - Air tankers
 - Rotary-wing
 - Helicopters



Aerial Wildland Firefighting Resources

- Aerial resources
 - Fixed-wings

- Airtankers

fixed-wing aircraft fitted with tanks that can be filled on the ground at airtanker bases or, by skimming water from lakes, reservoirs, or large rivers as in the case of flying boats and amphibious aircraft



Aerial Wildland Firefighting Resources

- Aerial resources
 - Fixed-wing
 - Airtankers
 - First mission flown 1930
 - WWII surplus aircraft: first free-flowing water drop 1955
 - First retardants: sodium calcium borate 1956
 - Small capacity of aircraft
 - Multiengine surplus aircraft: first aircraft fully dedicated to aerial suppression 1960s



Aerial Wildland Firefighting Resources

- Aerial resources
 - Fixed-wing
 - Airtankers
 - Single Engine Air Tankers (SEAT): $\leq 3,024$ liters
 - Medium aircraft: $\geq 4,536$ and $\leq 27,126$ liters
 - Heavy aircraft: $\geq 43,092$ and $\leq 46,116$ liters
 - Super heavy aircraft: $\geq 75,000$ liters



Aerial Wildland Firefighting Resources

Airtankers



Air Tractor 802F



Martin Mars Bomber

Aerial Wildland Firefighting Resources



Canadair CL-415



PBX Catalina flying boat

Aerial Wildland Firefighting Resources



Evergreen Super Tanker



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Aerial Wildland Firefighting Resources

- Aerial resources
 - Fixed-wing

- Lead Planes

Direct the activities of airtankers by both verbal target descriptions and by physically leading them on the drop run.



Aerial Wildland Firefighting Resources

- Lead Planes



O-2 Skymaster



V-10 Bronco

Aerial Wildland Firefighting Resources



Now decommissioned USDAFS' Beachcraft Baron
Lead Planes leading an Airtanker



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Aerial Wildland Firefighting Resources



New USDAFS Beechcraft King Air 100



American Champion Scouts 8GCBC



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Aerial Wildland Firefighting Resources

- Aerial resources

- Rotary-wing

- Helicopters

- May be fitted with tanks, called *helitankers*, or may carry buckets.

- May also be fitted with front-mounted foam cannon

- Most common bucket: the flexible bucket

- Bambi bucket in the US



Aerial Wildland Firefighting Resources



Bell 205



S-64 Erickson Air-Crane

Aerial Wildland Firefighting Resources



Helicopter dipping bucket into river

Aerial Wildland Firefighting Resources

- Fire retardants

Designed to suppress and decrease the intensity of wildland fires, and to protect property when wild fires threaten.

Decreases risks to firefighters, enabling them to construct fireline safely.



Aerial Wildland Firefighting Resources

- Fire retardants
 - Three types
 - Long-term
 - applied using fixed or rotary-wing aircraft
 - 85% water, 10% fertilizer and 5% other minor ingredients
 - Found to be toxic
 - Court mandate to set new guidelines



Aerial Wildland Firefighting Resources



Fire retardant drop over a wildfire

Aerial Wildland Firefighting Resources

- **Foams and Gels**
 - Mostly applied from ground equipment
 - Foams are basically concentrated dish detergents
 - Gels are basically water enhancers





¡Muito Obrigado!



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